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MANHATTAN, KAN., FEB. 12, 1906.

No. 20

The Origin of the Percheron Horse.

TO the reader of this article the writer will frankly state that his object is to present his subject in as condensed and concise a manner as possible. For this reason many details of minor importance have been omitted, there being an abundance of literature on equine history that treats the subject in a more exhaustive manner; hence, as stated before, the writer's aim is to give the principal and main facts in this historical sketch, as he knows them.

The Percheron horse of to-day descended in common from the same original stock as the other local draft breeds of France—the Baulonnias, Bretons, Picards, Argerons, etc. They are all Norman horses. The Baulonnias or Bretons were from the same primitive stock. The reason that they were known by their respective local names was due to the political divisions of France at this period (about 800 to 1600 A. D.). No one can tell the difference between any particular named strain of Norman blood when placed on the market in a mixed herd. A Percheron can sell for a Baulonnias, or *vice versa*. In fact, then, as well as at the present time, these types were interbred. The colt is reared in one section and when six months of age is bought by the feeder, who moves him to a different locality. The young animal is broken to work when about two years old. Two years more finds these Percheron horses at the large horse fairs or markets, where they are sold for the various purposes to which heavy draft horses are adapted. With this kind of treatment it becomes self-evident why the local named draft breeds of France are so closely related.

In this historical sketch the names Norman and Percheron will be used as synonymous, for their ancestors, after their type became fixed, were known all over Europe as the Norman horses; and their early history was not marked by any names peculiar to a locality or province. They were the Norman horse from Southwestern Gaul (Southwestern France) to England, and they had the same elastic temperament, mildness, patience, great size, and hardy constitutions which are their characteristics to-day.

The primary use of this great horse was for war. From 2080 B. C. to 1066 his only sphere of action was on the battle-field. There are no records to show that the horse was used by man for any other purpose before the time of William the Conqueror. The conditions during his long career as a war horse developed good speed, together with a gigantic frame, a frame that could with ease carry a half-ton of steel armor, and at the same time cover an immense territory in a day. This kind of training made the Norman horse the symbol of endurance, patience, and hardihood.

The first period of definite consequence in the history of the great draft horse of Europe is his condition at the fall of the Roman Empire. At this time we find the horse in all stages of development, from a conglomerate mixture of inferior stock, to a few excellent examples of equine breeding. The few high-grade horses found in the Empire were not due to any particular efforts of the Romans. Even if they did represent the center of civilization, they did not raise their own war horses, depending upon foreign countries for their cavalry mounts. With this kind of neglect we can understand the cause of the inferiority of this horse. The barbaric countries—Germany, France, the Netherlands, etc.—could not be depended upon for any intelligent breeding methods; those only survived as a type whose natural superiority outlived the neglect they received. These exceptions were the blacks of Western Germany and Gaul, the greys of Lombardy and Asia Minor, and the bays which had been imported from Africa and Arabia. The quality possessed by the Percheron is credited to these bay horses. They were smaller and finer-boned animals than the other large breeds. From these three types originated the great Norman horse.

The low condition of horse breeding in Western Europe remained in this state for three hundred years after the fall of the Roman Empire. The Catholic Monastery farms were the only places where intelligent breeding was practiced, and these particular places were few. Much credit is due these monasteries for preserving the purity of the Lombardy greys, which were in demand later on in war. The importance of their position was never so keenly realized until Charles Martel (732 A. D.), of Western Gaul and Germany, fought his famous battle of seven days and seven nights before he could defeat the pagan Mohammedans. This great victorious event in history proved the value of this horse in time of war, and after this time horse breeding was placed upon a sounder basis.

To Charlemagne (between 800-814) belongs the honor of first starting the foundation for the Norman horse. The kind of horse required was one that had good speed and good size combined. These qualities were necessary for drawing the heavy war chariots and to carry the more cumbersome steel armor which protected them. This combination was at hand in the big greys of Lombardy, raised under the supervision of the Monasteries, whose farms were the richest and most improved in Europe. It is commonly accepted by authorities that these Lombardy greys originated from or had a strong strain of Arabian blood, the grey coat being the main feature that they retained, their conformation being modified, due to environment.

The next type was the European Black, which were very large and heavy animals, coarse in fibre and clumsy. They were found in the Netherlands, and the black color of the Percheron of to-day comes from this strain.

Lastly comes the bays of Morocco and Arabian stock. They were more nimble and fleet animals, receiving their size from several distant crosses of the blacks of Gothic blood. The bays were found in Southern Gaul (Southern France); to this type the Percherons owe their quality and action.

With these three excellent breeds for foundation stock, the empire of Charlemagne had also the rich soil and excellent climate which is of equal importance in maintaining a great breed of horses.

From this date on we find the great Norman horse wherever his masters invaded an enemy's territory. They were successful as warriors practically without exception, and conquered all central and northwestern Europe before their power declined. They adopted the custom and religion of their hosts, and in time were absorbed in the population of the nations they had conquered. These peculiar characteristics of the Norsemen established their horse over all Europe.

The Norman horse does not make any historical appearance in agriculture until about the close of the Eleventh Century. In 1066 William the Conqueror was presented by his wife with a wood engraved copy of a large horse drawing a harrow. There are no records to show that the horse was used for agricultural purposes before this time; previous to this oxen and asses were used in the fields and for all material work. From this period to the present time we find the horse of Norseman fame, who played such an important part in the wars that made the history of nations, employed in the more somber pursuits of hard material

labor in the commercial world. This life has brought his conformation a little closer to the ground, that is, more on the bull-dog type, the old Norman horse of tradition being a more rangy animal than his posterity, and his speed has lessened, although he is far from being a clumsy animal to-day. We find him to day with the strong and hardy constitution, even temper, large size, and with the noble fibre and stamina that belonged to his ancestors of barbaric ages.

WAYNE WHITE.

Kansas Boys' Corn-Growing Contest for 1906.

WANTED: TEN THOUSAND BOYS TO ENTER THIS GREAT CORN-GROWING CONTEST.

The Kansas State Agricultural College, through the Farmers' Institute Department, announces a corn-growing contest for Kansas boys. It is important that this movement reach the greatest possible number of farmer boys, and it is also important that the work be undertaken in at least sixty counties, in what is known as the "corn belt."

To reach the greatest number and to interest the greatest number of farmers and farmers' boys the work should be handled in each county, through some local organization or through the county school superintendent, where no organization exists, or where such an organization does not take it up.

Therefore, the details will be worked out on the assumption that a contest is to be held in each county and that the winners in that contest will be considered eligible to enter the State contest. Each county organization must decide upon the character of the prizes. The Institute Department will plan for farmers' institutes to be held between the middle of October and the middle of December, in all of the counties where contests are being conducted, in order to give personal instruction in judging corn. All local corn judging will be done by members of the institute staff or by judges selected by the College.

Ten prizes will be awarded in each county contest on exhibits of ten ears in each entry. Each winner may then select another lot of ten ears, from his own raising, of course, and bring to the State contest, to be held January 1 and 2, 1907, at the Kansas State Agricultural College.

Each county organization will be expected to furnish to each boy *one quart* of seed-corn from any of the following well-known varieties:

VARIETIES OF CORN RECOMMENDED.

Name of Variety.	Type.	Maturing Season.
Kansas Sunflower.....	Yellow Dent.....	Medium late
Hildreth.....	Yellow Dent.....	Late
McAuley	White Dent.....	Medium late
Hammett.....	White Dent.....	Medium early
Mammoth White Dent	White Dent.....	Late
Hiawatha Yellow Dent.....	Yellow Dent.....	Medium
Griffing Calico	Calico	Late
Boone County White.....	White Dent.....	Medium
Reid's Yellow Dent.....	Yellow Dent.....	Medium early
Hogue's Yellow Dent.....	Yellow Dent.....	Medium early
Leaming	Yellow Dent.....	Medium early
Legal Tender	Yellow Dent.....	Medium early
Silver Mine.....	White Dent.....	Medium early

The first seven varieties named are "native" Kansas corns, recommended for growing in this State by the Kansas Corn Breeders' Association. The other varieties named are desirable, or pure-bred types of corn introduced from other states and recommended by the Kansas Corn Breeders' Association for growing in this State after the seed has become acclimated and the corn adapted for growing in Kansas. Other varieties of corn, not here named, which may be well bred and especially adapted to certain localities in the State, may be used in this contest. It is preferable to secure seed, as far as possible, from local growers, since such corn is more likely to be adapted for growing in that certain locality.

HOW TO BEGIN.

The county institute committee, or other organization or person or persons taking charge of this work, should decide as early as possible on plans for advertising the contest and upon the varieties of corn to be used, taking those deemed best adapted to their county, preferably using a corn raised nearest their latitude and under rather similar conditions. They should use only pure varieties of corn to avoid having their boys' samples thrown out at the State contest. The corn should be carefully selected for purity and uniformity of type and perfection of form. Then a day in March or April should be set for the distribution of this seed-corn. It should be shelled, measured and sacked, and sacks tied and handed out, and name, address and age of each boy taken, and also the name of his father or guardian. This list should be copied and deposited in a bank for safekeeping. The names and addresses of contestants should also be printed in all local papers. Usually the local papers will gladly publish this list every week from the time the first name is entered up to the week following the distribution of the seed. This publication always helps to en-

(Continued on page 314.)

Program for Winter Term, 1906, Showing

INSTRUCTOR.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.
Walters.....		Arch. Drawing.. 5	Arch. Drawing.. 12	Arch. Drawing.. 15
Weeks				
Brandt				
Willard ¹		Adv. Inog. Chem. 6	Chem. II..... 35	
Mathewson ¹				
Watkins.....		Chem. IV..... 25-25	Chem. I..... 35	Chem. I..... 25
Wood.....		Chem. II..... 50		
Popenoe ¹	Economic Entomology..... 6			
Dean ¹	Entomology..... 24			
Scheffer.....	Sp. Zoology..... 1	Phys. Geog. II. 28	Geology..... 11	Sp. Ent..... 2
Remick	Int. Calculus..... 22	Int. Calculus..... 24	Sp. Ent..... 4	Zoology Laboratory..... 33
Halstead.....	Geometry II..... 29	Algebra III..... 44	Algebra III..... 45	Algebra IV..... 37
Zeininger.....	Algebra II..... 57	Algebra II..... 59	Algebra IV..... 28	Algebra I..... 33
Seaton.....	Trigonometry..... 30	Trigonometry..... 13	Geometry II..... 48	Geometry II..... 42
Booth.....	Algebra III..... 46	Geometry I..... 50	Geometry I..... 29	Geometry I..... 31
Eyer.....		Physics IV..... 25	Algebra II..... 40	Algebra II..... 29
Hamilton.....		Physics III..... 25	D. C. Mach..... 22	Physics, S. C. 21
Anderson.....	Physics II..... 23	Physics II..... 14	El. Physics..... 47	El. Physics..... 49
Roberts ¹	Pt. Morphology, 26	Ag. Botany..... 22	Physics II Lab.....	T & T 11, W & F 12
Freeman ¹				
McKeever	Psychology..... 20	Phil. of Ed..... 11	Botany I..... 55	Botany I..... 40
McCormick.....			Adv. Gram..... 28	
Potter.....				
Thomas.....	Kinematics..... 16	App. Mech. I..... 26	Thermody. I..... 5	Kinematics..... 31
House.....	Woodwork I..... 37	Woodwork I..... 39	Mech. Drawing III.....	T & T 16, W & S 11
Wabnitz.....			Woodwork II..... 40	Woodwork II..... 44
Ridenour.....	Foundry.....	Monday 8	Machine Shop.....	Fri. 6, Sat. 4
Nicholson.....	Blacksmithing.....		Foundry..... Fri. 1	Shop Lect. I. W 9
Dickens ¹	Veg. Gard..... 40			Monday, A. M., 20; P. M., 15
Eastman ¹		Horticulture..... 45	Horticulture..... 38	Horticulture..... 37
Ahearn.....				
Brink.....	Eng. Lit..... 26	Rhetoric II..... 32		
Rice.....	Rhetoric I..... 25	Rhetoric I..... 27	English Lit. II. 30	English Lit. I. 32
Hopps.....	Classics..... 34	Readings..... 42	Classics..... 43	Readings..... 43
Ten Eyck ¹	Farm Mgt..... 31		Adv. Comp..... 23	Adv. Comp..... 28
Shoesmith ¹	Crop Prod..... 45			
Kyle.....	Agriculture..... 46		Crop Prod..... 38	Crop Prod..... 42
Calvin.....				Agriculture..... 40
Rose.....	Civics..... 34	Agriculture..... 45	Domestic Science II.....	Domestic Science II..... 15-15
Monsch.....	Pub. Spk. II. 31-42	Elective D. S. 10		
Price.....		Physiology..... 20		
Kammeyer.....		Cooking. Short Course.....		
Erf ¹		Europ. Hist..... 42		
Melick ¹	Butter & Chee..... 25	Pub. Spkg. I. 30-32	Civics..... 31	Economics..... 39
Cortelyou.....	German V 19-19			Dairying..... 35
Jackson.....	Adv. Comp..... 35	German II..... 29		
Valley.....	Singing..... 33	Adv. Comp..... 32	German II..... 34	German I..... 29
Brown.....	Violin..... 62	Singing..... 20	German I..... 47	German II..... 26
Augspurger.....	Piano..... 30	Mandolin..... 20	Singing..... 15	Singing..... 26
Schoenleber ¹		Piano..... 28	Guitar..... 29	Notation..... 36
Barnes ¹	Surgery..... 7	Medicine..... 8	Piano..... 20	P'ano..... 32
Goss.....	Bacteriology ² .. 34			Materia Med..... 16
Kinzer ¹	Breeds..... 36	Dis. Dairy An.... 30	Dis. Farm An.... 35	Gen'l Path..... 8
Wheeler ¹	Feeds & Feed.... 46	An. Husbandry. 9		
Rickman	Printing..... 6	Feeds & Feed.... 50		
Rodell.....	Adv. Grammar. 52	Printing..... 6	Printing..... 2	Printing..... 8
McFarland.....	Algebra I..... 36	Bookkeeping.... 61	Bookkeeping.... 46	Bookkeeping.... 50
Holroyd.....	Med. History.... 31	Adv. Grammar. 40	Adv. Grammar. 40	Composition.... 19
Short.....		Med. History.... 39	Anc. History.... 45	Anc. History.... 34
Thompson.....	Phys. Geog. I.... 43	Phys. Geog. I..... 46	Phys. Geog. II.... 47	Phys. Geog. II.... 43
Loomis.....				
Barbour.....	Sewing I..... 6	Sewing I..... 16	Dressmaking. Short Course.....	Course..... 16
Becker.....	Sewing III.... 12	20-19	Sewing II..... 13	Sewing II..... 5
Coe.....	Sewing II.....		Sewing I ²	Sewing I ² 17
Stump.....				
Lund.....				
Wood.....				
Allingham.....				
Harris.....	Classics..... 17	Algebra I..... 32		
Reynolds F.....	Readings..... 30			
Turner.....				
Elder.....	Readings..... 28			
Schiels.....				
Thayer.....				
Worden.....				
Miers.....				
Reynolds J.....				
Lyman.....	Phys. Geog. I.... 34	Phys. Geog. I.... 36		
Finley.....	Elementary Cooking.....	23-22		
Morton.....				

¹ Experiment Station work. ² Every other day.

STRUCTORS, SUBJECTS, AND NUMBER IN CLASS.

Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.
Descriptive Geometry.....	23		
Architectural Composition.....	6		
Freehand Drawing.....	Tu. 54, Sat. 45		
Object Drawing.....	Wed. 47, Th. 60, Fri. 62		
Geometrical Drawing.....	Tu. 43, Wed. 36		
Elementary Projection.....	Th. 31, Fri. 37		
Advanced Projection.....	Sat. 37		
Agricultural Chemistry Laboratory.....	Tu & Th. 20, Wed. & Fri. 5		
Qualitative Analysis.....	Wed. & Fri. 5		
Advanced Qualitative Analysis.....			1
Chemistry I Laboratory.....	Fri. 33, Sat. 17		
Chemistry II Laboratory.....	Tu. 30, Wed. 30, Thu. 16		
Chemistry IV Laboratory.....	Tu. 30, Sat. 22		
Zoology.....	33		
Entomology Laboratory.....	Wed. 11, Fri. 13		
D. C. Laboratory.....	Tu. & Thu. 11, Wed. & Fri. 12		
Physics Laboratory.....	40		
Physics II Laboratory.....	Tu. & Thu. 14		
Elementary Physics Laboratory.....	Wed. 32, Fri. 24		
Morphology Laboratory.....	Tu. & Thu. 25		
El. Psychology.....	80		
Mechanical Drawing VI.....	Tu. 7		
Engineering Laboratory II.....	Thu. & Fri. 5		
Cement & Concrete Laboratory.....	Wed. & Thu. 2		
Engineering Lab. I.....	Tu. & Thu. 9, Wed. & Fri. 11		
Shop Lect. VI.....	S 7		
Woodwork II.....	Tu. & Thu. 31, Wed. & Fri. 32		
Machine Shop.....	Tu. & Thu. 5, Wed. 6, Fri. 5, Sat. 13		
Foundry.....	Mon. 6, Fri. 9, Sat. 8		
Blacksmithing I.....	Tu. & Thu. 20, Wed. & Fri. 19		
Blacksmithing II.....	Sat. 19		
Dendrology.....	3		
Floriculture.....	35		
Grain Judging.....	Wed. 33, Tu. & Thu. 29		
Dietetics.....			Tu. & Thu. 14, Wed. & Fri. 16
Cooking. Short Course.....			
Europ. Hist.....	24		
Dairy Practice.....			
Singing.....	50	Singing.....	25
Band Instruments.....			46
Piano.....	24	Piano.....	24
Anatomy Laboratory.....			13
Bacteriology Laboratory.....	Wed. & Fri. 16		
Physiology Laboratory.....	Tu. 17, Thu. 24		
Stock Judging.....	128		
Printing.....	Tu. & Thu. 14		
U. S. Hist. A.....	27	U. S. Hist. A.....	33
Phys. Training.....	38	Phys. Training.....	52
Dressmaking. Short Course.....			19
Dressmaking.....		Tu. Thu. & Sat. 20	
Dressmaking.....		Tu. Thu. & Sat. 20	
Boiler and Engine Practice.....			
Arithmetic B.....	28	Arithmetic B.....	24
Grammar B.....	20	Grammar B.....	26
El. Physiology.....	17	El. Physiology.....	27
Freehand Drawing.....		Sat. 32	

courage others to enter. The College authorities hope that not a county in the "corn belt" will enter less than one hundred boys. And surely some counties will have five hundred contestants. Certainly no institute committee or fair committee or county superintendent ever had a greater opportunity to advance the agricultural interests of Kansas than is offered them in this movement for interesting the coming farmers of the State.

WHO MAY ENTER.

The contest will be limited to farmers' boys between twelve and eighteen years of age. The work must be conducted on a farm, not on a city lot. Each boy who gets a quart of seed must agree to plant it carefully, cultivate it well, and exhibit ten ears of corn, raised from that seed, at the county institute and corn contest the next autumn or winter. With his entry he must submit a brief statement as to date of plowing the ground, kind of land, length of cropping history, methods of preparing for planting, method and date of planting, methods of cultivation, date of gathering his samples, and a statement of number of mature stalks in plot on the first day of August, the number of ears, and the number of barren stalks. Each boy must further agree to attend, if at all possible, at least one session of the county institute. While all will be invited to attend the State contest, this will not be required.

THE STATE CONTEST.

All the winners in the county contests will be eligible to enter the State contest. If the farmers' institute holds a contest and the county fair offers prizes under our conditions, and if any individual offers prizes, making the same conditions as others, all the winners may select corn and enter their best ten ears at the State contest.

This contest will be held as stated elsewhere, at the Kansas State Agricultural College, on January 1 and 2, 1907, under the auspices of the Kansas Corn Breeders' Association and the Agricultural College. Boys who win in local contests will be allowed to bring or send the same ears exhibited at the local contest, or they may make a new selection, but from the product of the same quart of corn given out by the committee in the spring for the contest. A circular will be sent in late summer to all contestants, in which will be given in detail rules for selecting and judging corn, score-card, etc.

COUNTY AND STATE PRIZES.

The College does not wish to dictate as to the prizes in the local contest. In all counties where farmers' institutes are organized

in conformity with the State law, it might be advisable to use the larger part of the institute fund. Prizes might be outlined on something like the following scheme: For the best ten ears of corn, in order, \$9, \$8, \$6, \$5, \$4, \$3, \$2, \$1, \$1, \$1. In many cases local merchants may gladly contribute prizes of merchandise. Such a plan and such prizes would do wonders for the corn crop in Kansas and for the education of thousands of farmers' boys. The prizes for the State contest will be announced later, but they will be as liberal as it is possible to make them. Nothing is too good for the boys who are able to win out in the county and then in the State contests.

BEGIN WORK SOON.

Institute committees are urged to take hold of this work at once, as it will take several weeks to get it well advertised and to create general interest in the county among the boys. A local committeeman should be appointed for each township to work up a list of boys. All local editors should be consulted at once. It will be hard to make this a success without their help, and in one hundred cases of every hundred the editors of Kansas newspapers will contribute more time and more work and more cash (for labor) according to their means than almost any other class of people. The assistance of county superintendents of schools should be secured at once. No other person can wield as much influence for this movement as the county school superintendent. In fact, in counties where there is no farmers' institute organization, or where the organization will not take hold of this very promptly, the county superintendent will be asked to assume the whole responsibility of the contest.

BRIEFLY.

1. WANTED—10,000 Kansas farmer boys to enter County Corn-Growing Contests.
2. WANTED—At least seventy counties to take hold of this for the sake of the boys and for the purpose of advancing the farming interests of Kansas.
3. Farmers' institutes should be looked to first to organize for the county contest. Next, the College will look to the county school superintendent to organize the campaign for the boys. In fact, we shall look to these educated and progressive officers to coöperate with the institute committees in the work of enlisting the boys even if the farmers' institute undertakes the work. In one county in Nebraska last year the county superintendent enrolled 484 boys in a "corn-growing" contest. An Illinois county

superintendent has conducted these contests for many years, usually in connection with the farmers' institute.

4. The College will look to the patriotic Kansas newspapers to coöperate in this movement, as they have always been willing to help in advancing any good cause.

5. Correspondence is invited from farmers' institute officers, county fair associations, county school superintendents, newspaper men, and from any citizens interested in this movement for the boys.

6. This office should have on record the names and addresses of all officers of farmers' institutes, with the name of each institute. I ask, therefore, that the secretaries of these institutes report such list to me in order that a directory may be compiled, to be issued April 1, 1906.

Kansas State Agricultural College,
Manhattan, Kan., Feb. 8 1906.

J. H. MILLER,
State Institute Secretary.

Prizes for Good Roads.

The members of the Manhattan Commercial Club are very desirous of creating a deeper interest in good roads, and various schemes have been proposed. At the regular meeting held Tuesday evening the matter was thoroughly discussed and it was voted that the Club offer the following prizes:

1.—Fifty dollars (\$50.00) in gold for the best mile of road made with a "King Road Drag" within seven miles of Manhattan.

2.—Twenty-five dollars (\$25.00) in gold for the second best mile of road made with a "King Road Drag" within seven miles of Manhattan.

3.—Ten dollars (\$10.00) in gold for the best one-half mile of road made with a "King Road Drag" on each rural route leading from Manhattan.

4.—Five dollars (\$5.00) in gold for the second best one-half mile of road made with a "King Road Drag" on each rural mail route leading from Manhattan.

5.—No piece of road to take more than one prize.

6.—No prize-taking piece of road to be eligible for the same or a lower prize the second year.

7.—Competitors to furnish their own drags.

8.—The Commercial Club to select the judges of the contest: said judges to be three absolutely disinterested parties.

9.—The judging of the roads to be done at some time between April 15 and May 15, 1907.

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Local Notes.

The College stock-judging contest will be held on March 4.

The Architectural Club met at Professor Walters' residence on February 3.

Pres. E. R. Nichols was absent on College business from Monday till Thursday.

The College basket-ball team played the Clay Center high school team Tuesday night, with a score of 47 to 12.

The mid-term examinations were held Saturday, February 10, and the instructors are busy looking over the examination papers.

Mesdames E. R. Nichols and C. M. Brink feasted their eyes on the multitude of students attending the morning exercises in the Auditorium last Wednesday.

Asst. Prof. R. H. Brown, of the Music Department, informs us that the College Concert Band will give a full program concert at Wamego on February 21, and another at Wakefield on February 27.

Miss Antoinetta Becker, the new superintendent of the Domestic Art Department, is making preparations for a public exhibition of the work of her classes, to be held at the close of the winter term.

T. E. Weaver, the genial Rock Island agent at Blue Mound, Kan., has donated the poultry department a fine Light Brahma cockerel. Mr. Weaver has one of the finest flocks of the Light Brahmans in the State, and has been winning at the State show for several years.

W. L. Park, general superintendent of the U. P. R. R., J. O. Brinkerhoff, superintendent of the Kansas Division of the U. P. R. R., and H. G. Kaill, assistant general passenger and freight agent of the U. P. R. R., visited the Agricultural College on Tuesday morning. They were making an inspection tour of their road and its tributary region. All seemed to be greatly interested in the work and growth of the College, and especially of the dairy and live-stock departments.

The National Educational Association will hold its annual sessions during the second week in July, in San Francisco. This will give a splendid opportunity for visiting the west slope of the Rockies, as low rates are always given the teachers. Supt. J. D. Rickman is anticipating getting up a party to take the trip together, in case satisfactory arrangements can be made as to rates and special accommodations. Those anticipating the trip might do well by corresponding with him.—*Jayhawker.*

Experiments With Chinese Pheasants.

Experiments in the breeding of game birds will begin shortly at the Kansas State Agricultural College. The work will be under the direction of Prof. Oscar Erf, of the Dairy and Animal Industry Department, and Theodore H. Scheffer, assistant zoölogist, in conjunction with Mr. D. W. Travis, State fish and game warden.

About thirty birds of the variety known as Chinese or *Torquatus* pheasant will be shipped by Mr. Travis to the College breeding pens. Others may be secured from time to time. The State Game Commission will bear the expense of fitting up the enclosures and breeding pens. The pheasants supplied by the game warden become the property of the College. Mr. Travis will accompany the first shipment, and will incidentally look over the College farms and surrounding country with reference to their desirability as pheasant breeding grounds.

At present it is not the purpose to liberate any of the birds. They will be kept in enclosures and their eggs hatched, either in incubators or by domestic fowls of the bantam breeds. If any are released on the campus, they will be protected and their habits studied. It is hoped that they will propagate rapidly and become a valuable addition to the game supply of Kansas. One of their good points is that they attain maturity and are ready to ship by September 1 following their hatching in the spring. Fancy poultry usually does not mature until the spring of the next year.

The Chinese pheasant was introduced into Oregon some twenty years ago. They thrived remarkably well, completely stocking the state in a few years, and the Willamette valley is now commonly referred to by the people of Oregon and others as the "Sportsman's Paradise." One reason the pheasant is so prolific is that the male cares for the spring brood while the female prepares for another, so that three broods are raised each year. These all flock together at the end of the year. Correspondence was carried on or a considerable length of time with the Oregon game warden for the purpose of securing information for further work and study of pheasant breeding.

If the present experiment proves a success, and there is every reason to believe that it will, further experiments will be conducted at the College, in conjunction with Mr. Travis, with other game fowls and several species of squirrel not now found in the State.

The well-known Topeka publishers, Crane & Co., have just issued a new book written by Prof. William A. McKeever, of this College. It is entitled "Psychology and Higher Life." The work might be characterized as a treatment of psychology as related to every day living and to character building. It contains a number of chapters that would be of special interest to the general reader, notably those on habit, emotion, volition, social sensitiveness, higher life, etc. The book is a well-printed and neatly bound volume of 240 pages, and is listed at \$1.00. A special price of 70 cents is made for the local trade in Manhattan.

Hog-Feeding Experiment.

The Animal Husbandry Department of the Kansas State Agricultural College has just completed a hog-feeding experiment and marketed the hogs at the Chas. Wolff packing plant in Topeka, where slaughter tests of the different lots were obtained.

The experiment began October 9, 1905, ending January 29, 1906, a period of 112 days. There were ten hogs in each lot. The object was to test the value of tankage and alfalfa hay as supplemental feeds with corn. The following table shows the results as to the weights and gains, and cost of feed and gain:

No. of lot...	Pigs in lot...	Weight, Oct. 9, 1905	Weight, Jan. 29, 1906	Total gain..	Average daily gain.	Total pounds feed eaten.	Total cost of feed ...	Cost of gain per cwt. ...
I.....	10	1290	2400	1110	1.00	Corn-meal, 7690	\$48 05	\$4 32
II....	10	1275	3250	1965	1.75	Corn-meal, 7848; tankage, 1552 ..	80 07	4 07
III....	10	1310	2510	1320	1.18	Corn-meal, 7845; a falfa, 1340....	54 53	4 13

Feed prices: Corn-meal, $62\frac{1}{2}$ cents per cwt.; tankage, \$2.00 per cwt.; alfalfa, \$8.00 per ton.

The hogs brought the following prices at the packing-house: Lot I, \$5.32 $\frac{1}{2}$ per cwt.; lot II, \$5.40 per cwt.; lot III, \$5.35 per cwt. They all had more leaf-lard than the average hog, the amounts in the different lots being as follows: Lot I, 90 lbs.; lot II, 94 lbs.; lot III, 90 lbs. Although the hogs in lot II were heavier and seemed fatter on foot, the leaf-lard was but slightly greater than in the other two lots.

The carcasses were cut up in the presence of representatives of the Animal Husbandry Department. Every facility for obtaining necessary data was freely provided by Mr. J. B. Nicholson, superintendent of the plant, a special cutting being made of the three lots to allow more time for the work. Mr. Nicholson stated that the flesh and fat of lot II seemed firmer than the others in the warm condition. The hogs fed alfalfa hay showed a very fine quality of lean flesh, and the fat was not so heavy on their carcasses. The percentage of dressed weight for the three lots, not including the heads, was as follows: Lot I, 76.6 per cent; lot II, 73.5 per cent; lot III, 76.1 per cent.

Dr. DeWolf, a bureau of animal industry expert stationed at the plant as inspector, pronounced the whole bunch as unusually healthy. The lymphatic glands were all large and soft, and only one case of parasitic infection of the liver was found.

The results of the test will be published in bulletin form shortly by the Kansas Experiment Station.

The new Riley county court-house is growing rapidly. The stone-work of the basement is nearly completed. If the fine winter weather continues the carpenters will begin in a few days laying the joists of the main floor.

Charles Denison Kellogg, the "bird man," gave an illustrated lecture on bird life, in the Auditorium last Thursday night. The lecture was number six of the College lecture course. Those who heard Mr. Kellogg will never forget the charm of his songs as the birds sing them, nor the inspiring descriptions of true bird life.

The stock-judging classes were judging fat cattle and Short-horns this week. Next week it will be the Hereford and Angus breeds, and week after next, horses. The "horse week" will close on February 24 with a public sale of the celebrated Percherons of Henry Avery & Son, of Wakefield, Kan., whose animals will be on exhibition at the College arena after February 17.

The College basket-ball team has arranged the following schedule of games with other teams: At home—Clay Center, February 5; Friends University, February 15; Washburn College, February 21; State Normal, March 1; Baker University, March 8; Kansas University, March 23. Away from home—State Normal, at Emporia, March 14; Washburn, at Topeka, March 15. A game may also be secured with Haskell Indian School, to be played here. Last week it played its second game at Commercial Club Hall and a game with the twentieth battery of Fort Riley.

The oldest pupil whom the College ever enrolled was assigned to work in the farmers' short course this winter. He is T. T. McCray, ex-county superintendent of Nemaha county. Mr. McCray is over 52 years old, and has two children taking the regular course. We frequently have had students at College who were over 35 years old, and it happened several times before that mother and children sat together as regular students in the class room. We remember a case when the mother of a bright boy came here to take care of him and, in order to assist him in his studies, took the same assignment. At the end of the term the young man, who afterwards graduated near the top of his class, passed his studies with credit while his mother made a general failure of everything and went home.

Alumni and Former Students.

Harper's Magazine for February contains a beautiful little poem, "Be Strong," written by Lillie Bridgman, '86. This poem was originally a contribution to the program at the reunion of the Alpha Beta society last Commencement. It will be remembered by those present with much pleasure, and is well worth looking up by those who were not here.

At the last meeting of the Board of Regents, Mr. W. E. Mathewson, '01, was elected assistant chemist of the Experiment Station and at the same time his rank in the board of instruction was raised to that of assistant professor. This is a well-earned recognition of his thorough work and industry. His work for the last year and a half on the proteids of flour makes him especially fitted to take up the expected investigation upon the Kansas wheat in the Experiment Station.

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THE INDUSTRIALIST.

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No. 21

The Absorbed Article in the English Vocabulary.

MIDDLE English furnishes us some peculiar examples of "misdivision." In a vocabulary of the fifteenth century, for instance, I find *a nawnt* "an aunt," *a nold modyre* "an old mother," *a nox* "an ox," *a new lame* "an ewe lamb," *a nappe* "an ape," etc. In each case here noted we have partial absorption of the indefinite article by the following word. Shakespeare has *nuncle* for *uncle* and *nawl* for *awl*. The former of these is probably and the latter certainly due to *n* carried over from the preceding *an*.

We still have two words in which the *n* is retained. *Newt* shows the M. E. form *newte*, beside *an ewte*, *an euete*, etc., and more seldom *eft*. The O. E. form is *efete*, and this is kept in modern provincial Eng. *eft*. The second word of this sort is *nick-name*, from M. E. *an eke name* "an added name."

The reverse process is seen in words originally beginning with *an n*. *Adder* is from *nadder* (cf. Germ. *Natter*). *Auger* from M. E. *nauger* is derived from O. E. *nafo-gar*. *Nafo-gar* is a compound made up of O. E. *nafu* "nave" and *gar* "borer, spear" and has corresponding forms in the other Germanic dialects. *Umpire* stands for older forms *numpire*, *noumpere*, *nompere*, etc., from O. Fr. *nomper*, later *nompair*, literally "not equal, odd."

The definite article, too, has been partially absorbed. A case of this is seen in *nonce* in the phrase *for the nonce*. This had the M. E. form *for the nones*, properly *for then ones*. Here *then* is the dative of the def. article (O. E. *tham*) and *ones* is our *once*, the phrase being literally "for the once." In M. E. we find *atte nende* from O. E. *aet tham ende* "at the end." This has become *at an end*, in which *an* is not the indefinite article but the descendent of the dat. of the def. article. Chaucer's *atte nale* is similarly for *at then ale* "at the ale-house."

T'other with the apostrophe is a late form due to a misconception. In M. E. the form was *thet other* as also *thet one* (later *tone*) for *the one*, *thet* being here the neuter of the article. Partial

absorption (misdivision) took place, resulting in *the tone* and *the tother*. Thus we read in the ballad King Estmere, lines 5 and 6:

“The tone of them was Adler younge,
The tother was King Estmere.”

So in l. 129 we find *tone day* and in the next line *tother day*.

The total absorption of the definite article occurs in the city name *Atterbury*. The O. E. form was *Aet thaere byrig*, literally “at the city.”

As one would expect, most of our nouns consisting originally of article and noun are derived from foreign languages. In this case the article was not understood as such but was assumed to be a part of the noun, hence the Eng. article was prefixed. An illustration of this general principle recently came under my observation. A Miss Brown came to reside with a German family. She was called Miss Brown by all but the small daughter of the house, who addressed her as Fräulein Miss Brown.

Spanish has furnished us *lariat*, a compound of *la* “the” (from the Lat. fem. dem. pronoun *illa*,) and *reata*, “a rope used to tie horses together.” From this source we have also *alligator*. The M. E. forms *alligatér*, *alagarto*, etc., from Span. *el lagarto*, represent the masc. of the Latin def. art. *ille* and Lat. *lacertus* “lizard.”

Italian has given us *lavolt*, *lavolta* (both found in Shakespeare), from *la* “the” and *volta*, “a turning around.”

French has presented us with at least four words of this sort. *Lacrosse* is from Canadian French *la crosse*—*la* “the” and *crosse*, “a crook, hockey-stick, etc.,” cognate with Eng. *cross*. The second word in which the fem. article is combined with the noun is *lamantin*, “a sea-cow,” the same as *manatee*. The masculine article *le* occurs in combination with the noun in two words: *lammer* and *larigot*. The former is Scotch, has the additional forms *lamer*, *lamour*, *laumer*, and *lambur*, means “amber.” It is from Fr. *l'ambre*, i. e. *le* “the” and *ambre* “amber.” *Larigot*, “a kind of flageolet,” is similarly from O. Fr. *l'arigot* “the flageolet.”

The great majority of words containing the absorbed article came to us from the Arabic either indirectly, through Spanish principally, or directly. These words may be divided into three classes: those which broadly speaking have only a literary use and still have an Arabic flavor, those which have been fully incorporated into our vocabulary but still contain the Arabic article in its full form, and those words which have become a living part of our vocabulary and, further, have modified the form of the incorporated article.

This first division contains numerous words, among others the

following: *albacore*, *alcaid*, *alcalde*, *alcanna* (same as Eng. *henna*), *alcarraza*, *alcatras*, *alcavala*, *alcazar*, *Aldebaran*, *alerce*, *alfaqui*, *alferes*, *algaroba*, *algazel* (identical with Eng. *gazel*), *Algebar*, *Alhagi*, *Alhambra*, *alkekengi*, *alkermes*, *alkool* (identical with *alcohol*), *Alkoran* (same as *koran*), *Allah*, *almadia*, *almagist*, *almagra*, and *almucantor*. For particulars see the Century Dictionary.

To our second division belong the words given and briefly explained below.

Alchemy (M. E. *alkamye*) is from O. Fr. *alkemie*. The last-named form with its associates in the other Romance languages is from Middle Latin *alchimia*, which in turn is from Arabic *alkimia*, i. e., *al* "the" and *kimia* "alchemy."

Alcohol, formerly spelled also *alcohole* and *alkohol*, has come down through the medium of French and Latin from Arabic *al-koh'l*, literally *al* "the" and *koh'l*, "fine powder of antimony." For an explanation of the change of meaning see the Century Dictionary. *Alcohol* is furthermore the basis on which the words *aldehyde* and *alkarsin* are built.

Alcove is derived from Fr. *alcove*, this from Span. and Port. *alcova*, and the last form from Arabic *al-qobbah* from *al* "the" and *qubbah* "a vault, dome, alcove."

Alembic, with the earlier forms *alembick*, *alimbeck*, *alembeck*, *alambick*, etc., has come to us through O. Fr., Span., and M. Lat. as stepping-stones from Arabic *al-anbic*, from *anbiq* "a still," the latter form being in its turn derived from Gr. *ambix*, "a cup." We have also the contracted form *limbeck*.

Alfalfa is Span. *alfalfez* from Ar. *al-facfacah*, "the best feed."

Algebra is derived through Span. *algebra* from M. Lat. *algebra*. "bone-setting, algebra," from Arabic *al-jabr*, *al-jebr* "redintegration or reunion of broken parts."

Alkali is the modern form of M. E. *alkaly*, *alcaly*, which came to us from O. Fr. *alcali*, this through Spanish from Ar. *alqaliy*. *Qaliy*, from *qalay*, "to roast in a pan," meant "the ashes of saltwort, etc.," which abound in soda.

Almanac represents earlier *almenak*, derived through French from Ar. *al* "the" and *manakh* "calendar." The word though used by Arabic astronomers in Spain in the thirteenth century was not originally Arabic. (See the Century Dictionary.)

Elixir has the same form in O. Fr. and Spanish by which channels it has come from Arabic *el*, *al* "the" and *iksir* "the philosophers stone."

To our third list of nouns from the Arabic belong about a half-dozen words.

Apricot, which has many earlier variants, is derived through Port. *albricoque*, O. Span. *albercoque* from Ar. *al-birquq* "the apricot." The ultimate source is Lat. *praecoqua* "apricot," previously "early ripe," from *prae* "beforehand" and *coquere* "to cook."

Artichoke, a word introduced in the sixteenth century and having a multitude of forms, goes back through Spanish to Ar. *al-kharshofa* "the artichoke."

Assagai, also written *assegai*, *assagay*, *assegay*, etc., is derived by way of Fr. *azegaye*, *azagaye* and Span. *azagaye* from Ar. *az-zaghayah*, for *al* "the" and *zaghayah* "a spear."

Similarly *azimuth* (M. E. *azymuth*, *azimut*) comes to us through Fr. and Span. *azimuth* successively, from Ar. *as-sumut*, *sumut* being the plural of *samt* "path, point or quarter of the horizon."

Hazard, from M. E. *hazard*, *hasard*, "a game of chance," from O. Fr., where the same forms with the same meaning are found, is derived through Span. *azar*, "an unforeseen disaster, etc.," from Ar. *az-zar* "the die." *Az-zar* is for *al* (cf. *assagai*) and *zar* "a die."

Lute, "a musical instrument," has reached us through the successive stages M. E. *lute*, O. Fr. *lut*, *leut*, Span. *laud*, formerly *alaud* (cf. Port. *alaude*) from Ar. *al-ud* "a lute," from *al* "the" and *'ud* "a lute, harp," primary meaning "wood, timber," whence "stick" later "lute."

It will be noticed that Spanish is in most cases the medium through which these Arabic words have journeyed to us, this being as we would expect for historical reasons. Many of them have come directly from the Spanish, others have passed through French before reaching us.

JOHN V. CORTELYOU.

General Qualities of Oratorical Style.

IN previous issues of the INDUSTRIALIST I have had occasion to point out the qualities of style that are especially appropriate in the introduction and conclusion of an oration. It remains to notice some of the qualities of oratory as a whole. For, while there are certain characteristics that peculiarly pertain to the introduction and conclusion, there are likewise qualities that belong equally to this type of discourse in all its parts. These qualities are necessitated by the very nature of the art itself.

It must be remembered that oratory is popular discourse; it is preëminently to and for the people. In its highest and best sense, it is not for any exclusive grade of culture or condition of life. It is, rather, adapted to the understanding, tastes and motives of the great mass of men who, in their general average of in-

telligence, passions, and purposes, are termed "the people." It is to such an audience, made up of men of both high and low degree, of men swayed by sudden impulses or by deep-rooted prejudices, by likes and dislikes, by hopes and fears, by selfishness and generosity, but, nevertheless, with an underlying basis of common-sense and desire for fair play—it is to an audience made up of such men that the orator must address himself and his speech.

Since oratory is popular discourse it must possess those characteristics that fit it to the populace. These characteristics have to do with the three elements of thought, structure, and expression.

1. In the first place, the thought of an oration must be adapted to the popular mind. By this it is not meant that an audience must necessarily agree with the speaker's thought at the outset. Indeed, some of the greatest triumphs of oratory have been won over hostile hearers; as, witness Henry Ward Beecher's speeches in England during our civil war. It means, rather, that the thought, when presented, must be so plain, so direct, so simple, and have such an obvious bearing upon the main question, that its significance and force will be grasped at once.

This demand precludes the use of intricate lines of thought, of hair-splitting distinctions, of long and involved chains of arguments.

The best arguments for the orator are those in which the conclusion springs directly from the premise, with no intermediate steps to distract attention. Arguments from example and analogy are peculiarly adapted to the uses of public speech. They are tangible, easily grasped, easily applied, and generally forcible. In the use of the latter form of reasoning, however, care needs to be exercised that the analogy be a true one, as both the audience and the speaker himself may be misled by an apparently similar but actually unlike relation.

As the oration is for oral delivery, rather than for leisurely reading, and must produce its designed effect by a single utterance, its thought must proceed on broad and general lines. That is, the arguments advanced should be usually the main divisions of the discussion, explained, amplified, exemplified, illustrated, vivified and enforced with all the earnestness and eloquence of which the speaker is possessed. This much the hearers will grasp, and it will, likewise, grasp them. They will be moved by it. More than this is vanity. A multiplicity of detail is both confusing and wearisome. The only way in which a speaker, who indulges in

such minutiae of thought, will be likely to move an audience will be to move it toward the door. Aristotle well says (Rhet. Bk. I, Ch. II), "Your hearer is supposed to be a man of merely ordinary understanding," and for that reason, he argues, will not be won by intricate reasonings. Lord Chesterfield, somewhat cynically, expressed the same reason for the principle. "The receipt to make a speaker," he writes in one of his letters, "and an applauded one too, is short and easy. Take common-sense *quantum sufficit*; add a little application to the rules and orders of the House; throw obvious thoughts in a new light, and make up the whole with a large quantity of purity, correctness, and elegance of style. Take it for granted that by far the greatest part of mankind neither analyze nor search to the bottom; *they are incapable of penetrating deeper than the surface.*" As the speech is made not for exceptional, but for average hearers, the speaker will be wise, therefore, who proceeds on broad and general lines, so as not to lay upon them the burden of "penetrating deeper than the surface."

It should be remembered that an oration is a picture. It is an oral representation and reproduction of the visions that stir the speaker's own soul. The artist, when he paints a landscape, does not try to portray upon the canvas every spear of grass and every leaf of the tree. Are we, therefore, to assume that the artist does not faithfully depict the grass and the trees? Does he not, indeed, more truly represent the landscape by omitting confusing details and painting only those large and general objects to which he desires to call especial attention, while all the rest are made subordinate to serve as background? It is not art to paint a forest so that one "cannot see the wood because of the trees." The same principle that controls the painter governs the orator—governs him, too, in the choice of the thoughts he shall advance as well as in the language with which he shall clothe those thoughts. He chooses some great, ruling idea as his theme, and then sets forth some important truths, pulsing with the crimson blood of that theme—which truths, taken together, serve to center the attention upon that ruling idea, establish its truth and give it power.

2. From the nature of its thought and its underlying purpose, it follows that the oration must be simple in structure. The orator aims to accomplish one thing and one thing only, namely, to gain the assent and coöperation of his hearers with regard to his "object." That "object" is the focus to which everything centers and from which everything radiates. Whatever does not conduce to that one end is, for him, irrelevant. Every division of the dis-

course, therefore, must have a direct, unmistakable, intimate bearing upon the main question. A single principle runs through them all and tests their oratorical value; so in structure as in thought, everything makes for unity and simplicity.

3. In expression oratory, in common with other forms of discourse, must exemplify the three great qualities of style—clearness, energy, and beauty. If any difference is to be recognized, it is that oratory, more than any other form of literature, is dependent upon the first two of these qualities. As oratory is popular in its aims and processes, it must be understood by an average audience at a single utterance. It does not appeal to the aristocracy of intellect. It is not for metaphysicians, accustomed to speculate on the question, "whether a chimæra ruminating in a vacuum devoureth second intention," and other equally etherial abstractions; it is for plain, every-day men of average intelligence and culture. Neither is it for the leisurely study and meditation of those who read the printed page; it is rather for the understanding and appreciation of those who must receive their full impression by a momentary glance as the orator marches by to his goal. The public speaker, therefore, must be on his guard, lest while laboring to be profound he become turbid and find himself floundering in muddy waters of scholastic expression, the meaning of whose sesquipedalian words and serpentine sentences no hearer can fathom. Dr. Austin Phelps, in his excellent book on "English Style in Public Discourse," quotes a sentence from an essay of George Brimley, formerly librarian of Trinity College, Cambridge, which will illustrate this fault. Brimley "is discoursing," says Professor Phelps, "upon the nature of poetry, and he soliloquizes thus: 'A poetical view of the universe is an exhaustive view of all phenomena, as individual phenomenal wholes, of ascending orders of complexity, whose earliest stage is the organization of single coexisting phenomena into concrete individuals, and its apotheosis the marvelous picture of the infinite life, no longer conceived as the oceanic pulsation which the understanding called cause and effect.'" Clear as mud! Surely this tangled jargon illustrates in an "ascending order of complexity" one of the phenomena of expression which a presumably rational mind will sometimes display, when it allows itself to confound incomprehensibility with profundity. If this sentence mean anything in particular, it is safe to say that its meaning is safely concealed from every one but its author by the jungle of words in which he has so adroitly hidden it. But if such learned obscurity is inexcusable in the essay, how much more is

it inexcusable in the speech! The orator may be ever so scholarly; but never let him be scholastic. True learning and exhaustive thought on his part are desirable; pedantic affectation of learning and thought strutting under the mask of big words and turgid phrases is execrable. The orator must deliver his soul in one utterance. Therefore, let him speak so clearly, so directly, so unequivocably, that his hearers cannot mistake his meaning if they would. How else can he accomplish his purpose? How else can he arouse their attention, quicken their interest, convince their intellects, stir their sensibilities, gain their adherence? In a word, how else shall he make his speech successful?

CLARK M. BRINK.

A Legacy.

AMONG the many legacies that have fallen to mankind there is one which has probably done more to develop the various races than any other, and yet one toward which many look with regret because they have fallen heir to it, and that is the legacy of work.

It is work that has made the world. Past civilizations are known only through the works they have left behind them, and we judge them by these works and know of their industries, their customs, their characteristics, in fact their state of civilization, by the permanent results they accomplished.

What is true of nations is also true of individuals. Who are the great men—the characters that live to-day though they have been dead for years, perhaps for centuries? They are the men who have worked; yes, and put their very life's blood into their work. Some one has said, "By our work we stand revealed." And is it not true that all true work is expression of the intellectual and spiritual qualites, as well as the natural abilities? That whether we write books, paint pictures, build great structures, sway multitudes, teach the simple lessons of the school-room or perform the daily tasks, we express in each the characters that we are?

The work will respond to the amount of soul put into it. This thought is expressed more fully in the following quotation from Henry Giles: "Man may work grudgingly or he may work gratefully; he may work as a man or he may work as a machine. There is no work so rude he may not exalt it; no work so impulsive that he may not breathe a soul into it; no work so dull he may not enliven it." And as the work responds to the spirit of the worker, so, also, does the doing of the work have a reacting influence on the individual who performs it, which, if it be true, honest

work, is both beneficial and educational. Among the beneficial results are its effect upon the body. It makes the muscles strong and the brain clear and stimulates the heart action, making the blood flow through artery and vein more rapidly, giving to the body health and vigor. Tennyson makes Ulysses say after he has retired from an active service:

"How dull it is to pause, to make an end,
To rust unburnished, not to shine in use,
As though to breathe were life."

Work has also its educational effects. The mind is strengthened through the concentration necessary to successful work. For then it is that a man collects himself, and his powers are all centered in the one thing to be accomplished. Thus his resources are increased through the assurance and knowledge of the power within him.

It is through the work done that experience is gained. It is from experience that we are enabled to form opinions and judgments. All theories must be put to the test of practice; then, and not until then, can the errors be discovered and corrected. In the field of experience only can we get a true knowledge of our own powers, including both the strong and the weak points, and not until these are known do we know what we are capable of doing.

Work enlarges our thoughts and hearts if we will let it. The successful worker is larger than the work he is in because he is alert to the things around him and has an interest in the great result of which his work will be only a part. The present opportunity will not be despised in the ambition for the larger ones, for the small duty faithfully performed will be the discipline for the larger duties in a larger life.

If work is such an important factor in the making of the world and all things in it, as well as the making of the individual, it is worth while to give some thought to the preparation for ones life work. The head, the hand and the heart must be trained to respond harmoniously to demands made upon them. Best work can only be accomplished where each of these are fitted for service and are given willingly and cheerfully to the duties of life. And if it is true what Tennyson says in his "Bugle Song,"

"Our echoes roll from soul to soul,
And grow for ever and for ever."

it is a responsibility we owe to the world to leave behind us the result of a life spent in faithful, honest, willing work.

MARGARET J. MINIS.

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Local Notes.

Winter term will close on March 22.

The exterior of Professor Walters' new house is nearly completed.

Several senior girls went to Topeka last week to take the civil service examination.

The Ionians and Hamiltons have jointly invested in a new piano for their society hall.

The students from Washington county have a well-organized club and meet regularly once a week.

The pumping station froze tight on Monday night and had to be thawed out on Tuesday morning.

The College Y. M. C. A. has twenty-nine classes in Bible study this term, with an enrolment of 380.

Professor Kammeyer's first-hour public speaking class presented him a large bouquet of carnations last week.

The cold weather of last week prevented contractors H. Bennett and W. Stingley from working on their buildings.

Assistant and Mrs. Scheffer entertained the Ottawa County Club on St. Valentine's eve. All report a good time.

Two hundred thirty volumes of periodicals were received from the State bindery and placed on the book shelves last week.

The Corn Breeders' Association is having an "annual" printed of the addresses delivered at their recent meetings at this College.

Assistant Melick, of the Dairy Department, read a paper on "Practical Dairying" before the last meeting of the Agricultural Association.

There will be no class work on Washington's Birthday, Thursday of next week, but the library will be warmed and open for students who wish to read.

Professor Walters gave a sciopticon lecture on "The Architecture of the Ancients," before a joint session of the engineers and architects, last Saturday night.

Prof. O. Erf and Assistant C. W. Melick, of the Dairy Department went to Chicago, Wednesday, to attend the annual meeting of the National Dairy Association. Professor Erf will deliver an address on "Breeding Dairy Cows," on February 15.

Assistant Jackson's class in French is meeting regularly once a week at the home of Miss Minis. Six of the eight members of the class are members of the Faculty.

Dr. F. S. Schoenleber attended the annual meeting of the so-called tri-county farmers' institute at Wellsville on February 8 and 9, and reports a very successful session.

The Riley County Normal Institute will be held at Manhattan in June. Principal J. E. Edgerton, of the city schools, will be the conductor and Mr. L. D. Giffee, of Alma, one of the instructors.

Ex-regent John E. Hessin, of Manhattan, is looming up as a candidate for congressman from the Fifth Kansas district. His name will be presented at the congressional convention by the Republicans of Riley county.

Engineer Jacob Lund reports that the cold spell of last week was rather hard on his surplus coal pile. The daily consumption at the boiler-house was something over a car-load, and four men were kept busy tending the furnaces.

Gov. A. E. Meade, of Washington, accompanied by Regent Story, E. B. Purcell, and S. J. Yenawine, of Manhattan, visited College on February 10. The governor, who at one time was a Manhattanite, addressed the students in chapel.

A student took an electric light bulb to bed with him to warm his feet and as a result the fire department was called out. The bedding, including the mattress, was all burned. The aid of the fire boys was not needed as the bedding had already been thrown out.

The seniors received the juniors last Wednesday night, in Kedzie Hall. The offices and class rooms were handsomely decorated with plants, flags, and festoons. A program of solos, music and readings was provided, and light refreshments were served to all attending. It was one of the most successful entertainments of the season, and the seniors deserve much credit for it.

The Agricultural College needs more room. There never was a time in the history of the institution when additional room was needed more imperatively than this winter. Every class room and every laboratory is crowded to its utmost corner, and in some there is not standing room left for an additional student, while the halls and stairways are often literally packed, making movement almost impossible. More space—more room!

Next week a short series of farmers' institutes will be held in the northeastern part of Kansas. Subjects for special emphasis by lecturers from this College will be Corn Breeding and Orcharding. Following is the itinerary: Frankfort, Monday, February 19; Centralia, Tuesday, February 20; Oneida, Tuesday and Wednesday, February 20 and 21; Hiawatha, Thursday, February 22; Troy, Friday, February 23. The institute series will be attended from this College by Prof. A. Dickens and the institute secretary, J. H. Miller.

The last number of the *Farmers' Advocate* contains three contributions on as many different subjects by Professor Ten Eyck and a half-column article on "Farmers' Institutes" by Sec. J. H. Miller. The corresponding number of the *Kansas Farmer* contains a five-column article on the "Dairy Cow" by Prof. O. Erf, a half-column article on "Red or Black-hulled Kafir-corn" by Asst. G. C. Wheeler, a short article on "Prairie-Dog Poison" by Prof. E. A. Popenoe, and seven different articles on as many agricultural subjects by Prof. A. M. Ten Eyck. The contributions from this College fill over five pages of the *Kansas Farmer* and over two pages of the *Farmers' Advocate*, and they certainly testify to the practical usefulness of the "agricultural wing" of the "great school" on the banks of the Kaw.

Corn trains and wheat trains in Kansas does not mean trains loaded with wheat and with corn, but trains that will result in more heavily loaded trains in the future. The State is being crossed and recrossed and then "checked off" with trains on all the leading roads carrying College professors who meet the people at each stop and spend half an hour at each place in telling them how to raise more wheat and more corn with less labor. Kansas people take hold of anything. Tens of thousands of farmers have heard, among other truths, that it is better to plant seed that will produce 25 or 50 per cent more corn or wheat to the acre than can be produced by using unselected seed. Let Kansas awake to the fact that these trains mean 120,000,000 bushels of wheat instead of 90,000,000, and the day of poking fun at scientific farming is a thing of the past. The man who makes fun this year will try to make wheat next year. The Kansan will even submit to education if it will make more wheat and corn and increase the per capita yield.—*Colman's Rural World*.

A farmer of Miami county writes to the local editor, wanting to know whether the College has abandoned its old plan of holding farmers' institutes of several sessions for the new plan of holding "railroad institutes." Our friends may rest assured that we are still in the old kind of missionary work. The following item from the Topeka dailies of February 14 will prove that the good work is going on as well as ever: "The Farmers' institute of Elk county was in session yesterday at the court-house, which was packed to the door with an interested audience. Mr. J. H. Miller, director of State institutes, talked to those present of corn breeding in a convincing way, illustrating his ideas by samples taken from the local raising. Mr. Miller's lecture was largely on the importance of breeding for a fixed type that will represent a better corn and more of it with less labor for the grower. These lectures are under the auspices of the Kansas State Agricultural College, and are a part of a series inaugurated by the Santa Fe, and can not fail very materially to increase the amount of corn now grown to the acre. The professors on the trip also talk on hog and poultry raising by both men and women. A large number of the women were in attendance at the session yesterday. The institute will become a permanent fixture in the county."

Alumni and Former Students.

R. S. Wilson, '04, attended the farmers' institute at Burden and reports success in the practice of agriculture.

E. M. Amos, '02, will print the *Western Poultry Review*, Manhattan, hereafter, and in connection therewith run a general job office.

V. L. Cory, '04, who has been working at Modesto, Cal., this winter will soon return to the coöperative station at McPherson.

Ass't. R. E. Eastman, of the Horticultural Department, was absent last week on account of the death of his brother Vernon, of Bloomington, Kan. Vernon was a first-year student here in '05.

T. W. Allison and Inez (Manchester) Allison, both of '98, drove twelve miles to attend a meeting of the farmers' institute at Peabody. Mr. Allison exhibited some fine samples of alfalfa seed of his own production. Both have pleasant memories of friends at College.

NEW ENGLAND ALUMNI ASSOCIATION.—Plans are being made for a reunion of K. S. A. C. students, probably in Boston, about April 1. Any who can attend the meeting at about the above time and place are requested to write to either Mr. A. B. Carnahan ('05), 28 Warren street, Lynn, Mass., or Prof. F. A. Waugh ('91), Amherst, Mass.

M. H. Markcum, second-year student in 1881, is now a prosperous farmer in Cowley county. He met the alumni editor at the Arkansas City institute last week for the first time in twenty-five years. Mr. Markcum has promised to visit the institution in the near future. In his day only the north wing of the Main building had been constructed, and a broad public highway ran across the College farm between the shop and what is now the Women's Gymnasium.

J. G. Harbord, '86, has now been in service in the tropics nearly seven years, with a break of only eight months spent in the States. He hopes for a leave of absence next April, and if it is granted he expects to put Manhattan on his program. He writes: "In a recent number of the INDUSTRIALIST, I saw that you have six Filipino students at the College now, and that one of them comes from a little town of Lucban, about twenty miles from my present headquarters at Lucena, Tayabas Province. I marked the copy of the INDUSTRIALIST and sent it to the boy's parents, to their very great joy and pride, and more or less mystification. I was in a post yesterday in Batangas, where O. G. Palmer is a second lieutenant of the Seventh Cavalry, but he was absent and I did not get to see him. There are several K. S. A. C. men in the army now, Helmick, Todd, Wheeler, Ned Green and myself among them. I saw Palmer a short time ago and we had dinner together in a little hotel in the southern end of Luzon, and I did more talking of College matters than I have before for ten years."

Walter R. Ballard, '05, who, since graduation, has been doing landscape gardening work at Swope Park, Kansas City, has been appointed assistant in horticulture in the Maryland Experiment Station, at the State Agricultural College, College Park, Md. He left Kansas City on February 14. His new work will be experimental and investigational, no teaching being required of him. The college is within eight miles of the national capital, connected with it by electric road. He says in his letter that he is close enough to make an occasional trip for Sunday dinner with "Teddy."

Percheron Sale at the College.

Henry Avery & Son, of Wakefield, Kan., will sell 50 head of Percherons, including 16 stallions, at the Kansas State Agricultural College, on February 24. The horses will be shipped to the College a week in advance of the sale, where they will be at the disposal of the students for judging purposes until the date of sale. The sale will occur at the College barn at 12:30 sharp. The auctioneers will be the well-known Colonels Harriman, Woods and Brady.

The sale differs from the ordinary in that it is a closing-out sale. Every animal offered for sale will be registered stock. Included in the number is the great herd and show stallion, "Bosquet," register number 41105 (46612). This great stallion is without doubt the greatest Percheron ever offered at a public sale, having defeated both first and second prize winners at the World's Fair at St. Louis. It is safe to say that he would add more value to any herd of Percherons than any other purchasable Percheron in France or America.

Included in this sale will also be the world's champion Percheron mares, "Lena" 40417 and "Mina" 31721. They are St. Louis winners that are still winning. They have been shown all over the country, from St. Louis to the Kansas City Royal in 1905, and have never met defeat. They are half-sisters, sired by "Romeo," weigh a little more than a ton each, and are not yet four years old. This pair of mares is entitled to make some Percheron history on sale day, as the buyer who is so fortunate as to get them will know he has the right foundation for a high-class Percheron herd.

Along with the other good things in the sale will be the champion gold-medal group of five mares. This collection of mares has won the Percheron Association special \$100 gold medal twice this last show season of 1905 and has never been defeated.

In this sale will be the winners of sixty-nine ribbons and gold medals, and there will be something for everybody from a weanling colt at a low price to a show herd at your own price. Some nicely matched pairs of mares and a good many successful brood mares that are well broken to work will be included in the sale. Every mare in this entire collection that has reached four years of age has proved her usefulness, and Messrs. Avery and Son are prepared to give the strongest guarantee on their breeding stock that was ever given at a public sale.

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The Silo.

THE silo, in one form or another, and the feeding of ensilage, dates back to antiquity. Twenty years ago few farmers knew what a silo was, and fewer still had ever seen one or feed ensilage to their stock. It would probably have been necessary at that time to publish a book describing the silo system, with definitions of silo and ensilage. Now all farmers who read agricultural papers, or who attend agricultural conventions or agricultural colleges, are at least familiar with the fact that a silo is an air-tight structure used for the preservation of coarse fodders in succulent condition, and that silage is the feed taken out, even though they have not had a chance to become familiar with the appearance and properties of the latter.

It was not until the latter part of the 70's that the building of silos intended for the manufacture of ensilage began in this country. To-day silos are very common in the East, especially in the great dairy district of the Mohawk Valley, in New York, the Western Reserve of Ohio, and the Elgin district of northern Illinois and southern Wisconsin, in the latter state being as common as barns.

In 1888 the United States Department of Agriculture could find only ninety-one farmers in this whole country who used silos. The feeding of silage is now considered a necessity on thousands of dairy farms in the United States, and it is a noticeable fact that the states and localities ranking first in dairy importance are the ones in which the most silos are found. It is likely that if a census were taken of the number of silos in use in this country to-day, we would find between four and five hundred thousand.

The silo as a means of preserving and storing feed has not as yet become a very important feature of Kansas dairying. But with the increase in population and steady rise in the valuation of land, the Kansas dairy farmer must look to methods whereby two cows can be maintained where but one was kept before, if he is to continue to reap a profit from his labor and investment.

Recognizing these facts, the Kansas State Agricultural College

purchased, in 1902 and 1903, two one-hundred-ton cypress stave silos from an eastern firm. They were installed on the east side of the dairy barn, and what was then the Farm Department began a series of practical tests, preformed by students, to determine the best and cheapest silage crops.

The siloing of feed compares favorably with the canning of fruits and vegetables. There are various feeds that can be siloed, but it has been definitely determined that Indian corn is best adapted for this purpose. However, alfalfa and cow-peas, or soy-beans, are being siloed at the present time with great success. A mixture of alfalfa and corn, or soy-beans and corn, is preferable to either of these siloed alone, on account of the balanced nutrients which these feeds contain.

The advantages of silos are numerous. The silo enables the farmer to preserve a larger quantity of the food material of the original fodder for the feeding the farm animals than is possible by any other system of preservation now known. Pasture grass is the ideal feed for live stock, but it is not available more than a few months in the year. The same is true of all siloing crops. When made into hay, the grasses, and all other green crops, lose some of the food material contained in them on account of the loss of leaves and other tender parts, and on account of the fermentation that takes place while the plant is drying out or being cured. In the case of Indian corn the loss from the latter source is considerable, owing to the coarse stalks of the plant and the large number of air-cells in the pith. Under the best conditions cured fodder corn would lose at least ten per cent of its food value when cured in shocks. Such a low percentage of loss can only be obtained when the shocks are cared for on the cutter and put in the field under ideal weather conditions. In ordinary farm practice the loss in nutritive value will approach twenty-five per cent., and will even exceed this figure unless special precautions are taken in handling the fodder.

Comparing these large losses in food material in field-cured Indian corn, there is a comparatively small loss in the silo caused by fermentation or decomposition of the living plant cells as they are dying off. It has been frequently determined that the average loss of dry matter in the fodder corn during the silo season does not exceed four per cent.

Summarizing the considerations concerning the relative losses of food material, as given by the various stations, in field-curing and siloing of Indian corn, we may say that the latter, under favorable conditions, is far more economical than the former, and

therefore a larger quantity of food materials is obtained by filling the silo with fodder corn, than by any other method of preservation known at the present time. Besides this comes the great problem of succulence. All feeds of a succulent nature are more digestible and more palatable than dry feeds. We all know the difference between a juicy, ripe apple, and dry fruit. In the drying of fruits, as well as in the drying of corn fodder, water is the main component taken away. This causes a loss of certain flavoring materials, which, though they do not vary much in the chemist's balance, are of the greatest importance in rendering food materials palatable. It is the same food materials which are washed out of the hay during heavy rains, and renders such hay of no value, often of no more value than so much straw—not because it does not contain nearly as much food substance, like protein, fat, starch, and sugar, but because of the substances that render hay palatable having been removed by the rain.

The influence of well-preserved silage on the digestive system and general health of the animal is very beneficial. It is a mild laxative, and acts in this way very similarly to green fodder.

The filling of silos is the all-important problem at the present time. As has previously been stated, corn is one of the best feeds for making silage. Corn should be left in the field before cutting until it has passed through the doughy stage, that is until the kernels are well dented and glazed, as in the case of flint varieties. Where large silos are to be filled, and in case of extreme dry weather when corn is drying up rapidly, it would be well to fill the silo a little before it reaches this stage, as a greater part of the corn would otherwise be apt to be too dry. There is, however, less danger in this respect now than formerly, on account of our modern deep silos, and because we have found that water applied directly to the fodder in the silo acts in the same way as water in the fodder, and keeps the fermentation in the silo in check.

The cutting of corn for the silo is usually done on small farms by hand. Many farmers have been using self-raking and corn-binding harvesters for this purpose, while others report good success with a sled or platform cutter. If the corn stands up well and is not of a very large variety, the end sought may be reached in a very satisfactory manner by either of these methods. If, on the other hand, much of the corn is down, hand cutting is to be preferred. A number of different makes of corn harvesters and corn cutters are now on the market, and it is very likely that corn cutting for fodder will be done away with in the years to come, at least on large farms.

After the corn is cut, a low rack, with wagon, is very essential for hauling the corn, for corn in the green state is extremely heavy and requires much energy to load the same on high wagons. The corn having been hauled from the field to the silo has still to be reduced to a fine, homogeneous mass, convenient for feeding and economical as far as the utilization of the silage for feed is concerned. In order to do this the whole of the corn, ears and all, may be run through the ensilage cutter. The corn is unloaded on a table and run through the cutter, after which it is carried through a tube by means of a blast of air, up into the silo window, and is delivered into the middle of the silo. If corn is siloed ears and all, it is necessary to keep a man or boy in the silo while it is being filled, to level the surface and tramp down the sides and corners. If left by itself the heavier pieces of corn will be thrown each way and the light leaves and tops will come closest to the discharge, and as a result the corn will not settle evenly and the different layers of ensilage will have a different feeding value. To assist in the distribution of corn a pyramidal box may be hung in front of the door and below the top of the carrier. This may be three feet square at the base, and taper to a point, at which a rope is attached for hanging to the rafter. The falling mass of corn will strike the box and be divided so as to distribute to all parts of the silo. The proper distribution of cut corn, after it has been elevated and blown into the silo, is a matter that should have proper attention at the filling time. If the cut material is allowed to drop all in one place and then have no further attention, constant falling of the material in one place will tend to make that portion solid, while the outside will not be so. And besides this, the pieces of ears and heavier portions will continually roll to the outside. As a result the silage cannot settle evenly and good results will not follow. After the filling process, the cut material should be leveled off, and the common and most successful practice is to keep the material higher at the sides than in the center, and do all the tramping at, and close to, the sides, where the friction of the wall tends to prevent as rapid settling as takes place in the center. For this reason, in the modern deep silo, no tramping, or at least as little as possible, should be done except close to the walls. The weight of silage accomplishes more than any amount of tramping, and all that is necessary is to see that the silage is evenly distributed and to assist in settling by some tramping at the sides.

After the silo is filled the silage is left to settle. In the course of several weeks a layer at the top, approximately a foot deep, will begin to decay and mould and seal the rest from further decom-

position. When feeding time comes this top layer is removed to a depth sufficient to reach pure silage. The silage in a silo is always more or less heated on account of the fermentative process, hence the top layer, which is cooled from one feed to another, should be raked off evenly and then fed.

Silage, the same as canned products, should not be exposed to air for too long a time, for decomposition takes place very rapidly.

Economy in the production of food material means an increased profit, hence as the price of feed advances on Kansas farms, the silo will become a necessary adjunct to the Kansas feeder.

The principal lesson to be learned from experiments at the Kansas State Agricultural College is that the farmer who would produce milk cheaply should have alfalfa or clover hay and a silo. A combination of silage and alfalfa hay make the cheapest milk-producing ration available to the Kansas dairyman. The addition of grain will increase the milk flow to some extent, especially in the first few months of the lactation period. Later in the period the need for grain decreases, and from the standpoint of most economical production very little grain is needed if alfalfa roughage is provided for feeding.

Evolution of the College Student.

INTRODUCTORY STATEMENT.

THE general theory of evolution has gained wide acceptance among educated people, but the specific steps in the process have never been fully traced out in any single field of investigation. The biologist of to-day has, within the last decade, seen some perplexing questions satisfactorily settled, but only to find that a new problem more ultimate and quite as perplexing presented itself for solution. By the very nature of the case, the situation must ever remain thus, for the discovery of any new principle in evolution only serves to push the problem back one step farther toward its infinite source.

The evolution of the human race is now an accepted fact; and that this evolution is proceeding to-day as rapidly as ever is also regarded by many scientists as true. There is also a well-known theory—a so-called "recapitulation" theory—maintaining in effect that, during the course of his life, the individual tends in some degree to pass through the series of stages of development that

have been peculiar to the race or species as a whole. Facts suggestive of this theory were recognized by Agassiz.*

Some psychologists have tried not only to establish the theory—more or less fanciful—that the mental life of the individual is an abbreviated repetition of the mind-history of the race, but they have also offered it in explanation of childish dispositions. One's interest in this theory is somewhat aroused when he recalls his own youthful fondness for savage and barbarous deeds, so that perhaps it is literally true that the average boy has his "stone age," "bow-and-arrow age," "age of mud-houses," and of "fire and fish," and the like.

Time was when the average person of intelligence perhaps believed the hand of some kind of fate to have marked out for him beforehand an unalterable career, but modern science has made this view seem ridiculous. A careful scrutiny of the story of the mind, whether of the race or of the individual, seems, if we classify roughly, to reveal a gradual coming to consciousness of (1) external objects or acts, (2) of external conditions, (3) of the self as distinguished from the non-self, and (4) of the power of self direction. Whereas, the first three stages given above are characterized by the acts that are more or less completely shaped and directed by the environment, the last one is suggestive of a condition wherein the race or the individual tends to *create* the environment in accordance with self-directed aims.

THE PROBLEM OUTLINED.—It now being recognized that character development is an evolutionary process which continues from the cradle well-nigh to the grave, it is proposed by the present writer that there be given a somewhat detailed treatment of a certain very interesting portion of this process, viz., the period of the student life in college. On the day that the young person leaves the parental home for his first entrance upon college duties he takes his destiny into his own hands. He is perhaps for the first time beginning to be made aware of his ability to shape his life purposes to suit his own ends (4 above).

This college period is fraught with tremendous consequences to the average student, and it is doubly charming to him because of the great variety of new experiences which it holds in store for him. It has also a never-ending fascination for the advanced student of psychology, because of the opportunities it affords him for observing directly so many quickened and heightened processes of "mankind in the making."

*For a discussion of this theory see Baldwin: Dictionary of Philosophy and Psychology; Milner: Lectures and Addresses.

Let us have in mind, then, in the treatment of this subject, the characteristic mental attitudes and volitional acts during each sub-stage of the period, and let us offer incidentally some reflections upon college life as the typical student actually lives it, and also as he might live it. While it would not be practicable to present the full account through the medium of the INDUSTRIALIST, for the treatise here proposed the following preliminary topical outline is suggested:

1. The Preparation for College.
2. The Prescribed Course of Study.
3. The Unprescribed Course.
4. Relations with the Home Folks.
5. Working One's Way.
6. College Manners and Mannerisms.
7. The Changing Attitude and Bearing of the Student.
8. Literary and Scientific Societies.
9. College Spirit and Discipline.
10. Characteristics of True Scholarship.
11. College Love-making.
12. College Athletics.
13. Fraternal Organizations.
14. Philanthropic and Religious Societies.
15. The Life-Purpose.

ANTICIPATING COLLEGE.—Why send the boy or girl to college? Why, because others do, and it is expected that parents of good breeding will give their sons and daughters the advantages of college training. It's a *duty*. Besides, it furnishes greater opportunities for success in life. Such are the usual statements with regard to this matter, but there are other and better reasons. (1) The mere experience of spending a few months away from home and in the peculiarly exhilarating atmosphere of the college is in itself worth almost the cost of the first year's schooling. To the average young student this getting away from the old self and the old environment means a powerful awakening of new processes of consciousness. His being is somewhat made over and the whole trend of his life changed permanently. But some students (yea, many) ought to quit college after one year and seek more profitable employment somewhere else. No young man can be entirely fair and just in his estimate of himself and others if he settles down in the old home district without ever having spent even a few months away from home. He is almost certain to be mean and narrow in his judgments, and his life is likely to be grinding and unprofitable while his thinking will lack variety and spontaneity.

(2) A second good reason for sending the youth to college is that

the college course rightly mastered increases many fold his *consciousness of power* over his environment. Not wealth and aggrandizement, but that inner sense of worth which comes from one's consciousness of being able to overcome trying and antagonizing conditions—such is a permanent source of satisfaction and delight. The college course is best suited to give preparation for this type of character.

W.M. A. MCKEEVER.

(To be continued.)

Bloating in Cattle.

(*Tympany or Hoven.*)

ASTRIC TYMPANY is a common ailment of cattle, being easily recognized by a uniform swelling of the left side of the animal, especially in the region of the flank. The accumulation of gas in the first stomach (paunch or rumen) is the cause of the distention. Indigestion or paralysis of the stomach, from no matter what cause, will bring on the disorder. The affection has been observed especially in weak, unthrifty cattle when first turned on a good pasture, or after they have broken into a corn bin or a stock of potatoes or turnips. The affection is extremely common in the spring when cattle are first turned on alfalfa or clover. These plants being eaten very rapidly and in large quantities, and the readiness with which they ferment, produces indigestion. Frosted foods commonly cause bloating, not only from the chilling action on the stomach, but also the tendency of all frozen vegetables to undergo rapid fermentation when thawed out. Inflammation of the rumen often causes bloating, the inflammation being caused from the ingestion of hot or cold foods, foreign bodies (nails, needles, wire, bones, etc.), irritant drugs, and poisons.

SYMPTOMS.—Swelling of the flank on the left side is characteristic, and in well-developed cases the distention may be above the level of the croup. Tapping of the finger on the elevated portion gives a drum-like sound. The patient stands with an anxious expression, and may wander about uneasily and show great distress. In severe cases, if not relieved in time, the animal breathes with great difficulty, staggers in walking, or even in standing, and in a few moments falls and dies from suffocation. The distention of the stomach may become so great as to prevent the animal breathing.

TREATMENT.—In less severe cases all that may be necessary is to drive the animal on a walk for a quarter or half an hour. A simple treatment is to pour cold water on the animal's back, allow-

ing it to run down over the distended stomach; if possible a hose can be used to throw water direct from a hydrant onto the animal's body. This last treatment is beneficial in starting a contraction of the muscles of the abdomen, and in turn stimulates the muscles of the stomach. Some prefer to use a bit or gag in the animal's mouth; when the patient tries to dislodge the bit this causes movement of the tongue, jaws, and throat; a stimulation of saliva is the result; it being swallowed opens the lower end of the oesophagus and allows the gas to escape through the mouth. These simple methods of treatment are more or less satisfactory in the less extreme cases, while in urgent cases the gas must be allowed to escape without delay or otherwise the animal dies from suffocation. The trocar and cannula is the most satisfactory instrument to use in tapping cattle; the instrument should be clean, and if time will permit it should be boiled or have hot water poured on it, or rinsed in a disinfectant before using. An incision should be made through the skin at the highest point of the swelling, and is usually located at the centre of the triangle formed by the last rib and point of the hip and the transverse processes of the lower vertebræ. The trocar and cannula are placed together and the point of the trocar placed in the incision that has been made; with one blow of the hand the trocar and cannula should be driven through the abdominal wall and into the distended stomach. The trocar is then removed and the gas allowed to escape. The cannula should be left in position as long as any gas escapes. It is often beneficial to place a funnel in the cannula and pour a disinfectant that may be handy, directly into the pouch, thus checking the fermentation. At times it is necessary to keep the cannula in the stomach for several hours so as to prevent a repetition of the former attack. If the cannula be left in, it should be watched by a competent attendant who will not leave the animal until the gas has ceased to issue through the instrument. In removing the cannula the trocar should be inserted so as to force any food back into the stomach that may have accumulated in the cannula during the escape of the gas. Just as soon as the animal appears to be out of danger it is necessary to resort to internal treatment, thus checking fermentation. Turpentine in two-ounce doses every one to three hours, given in a pint of milk, is beneficial; also any of the coal-tar products well diluted. A full pound of epsom salts dissolved in two quarts of water to clean out the system is often advisable. A purgative is also beneficial in keeping the bowels open, as animals often become constipated after an attack of indigestion.

C. L. BARNES.

Rule Governing Special Examinations.

At a special Faculty meeting held recently the following regulation was adopted:

(1) A student receiving less than 60 per cent in any subject shall not be allowed a special examination in that subject, but shall be required to pursue it in class at the first opportunity. A mark of 60 per cent or over, but less than 70 per cent, shall be called a condition. A student receiving a condition in any subject shall, in case the subject is susceptible to an examination, be entitled to take the condition examination in that subject at the time and place regularly appointed for it. He shall not take a condition examination at any other time or place except by two-thirds vote of the Faculty. It shall be the duty of the student receiving a condition to learn the time and place set for the condition examination and be present at that examination without any notification from his instructor or assigner. In subjects not susceptible to examination, conditions shall be made up at the time and in the manner determined by the head of the department in which the subject is taught. Condition examinations shall be held on entrance examination day at opening of fall and winter terms, and on the third Monday of the spring term, for the subjects of the preceding term. A condition not made up at the first opportunity shall be changed to a failure and the student be required to repeat the subject in class.

(2) A student receiving a condition may, in the judgment of the assigner, be assigned to dependent subjects. Shall he fail to make up the condition at the time set, he shall be required to drop the dependent subjects and be given no grade for the work he has done. In industrial work, the instructor may withhold the grade of any student and send in a mark of deficient when the quality of the work done by the student is satisfactory but the quantity is not. A deficiency shall be made up when the student has completed the required quantity of work in a satisfactory manner. A deficiency may be made up outside of class, but shall be made up by the end of the fourth week of the term following that in which it was made, or be changed to a failure and the student be required to repeat the subject.

The cadet battalion will resume the regular weekly battalion dress parade and ceremony drills, commencing Friday, March 2. The exercises will be followed by a short concert by the cadet band. Drills commence at 2:45 P. M.

In *World's Events*, under the heading "Types of Men Who Will Never Succeed," and a sub-head of "The Man Who Refuses to Earn More Than He Gets," Mr. A. S. Monroe says: "And still another type of man who will never succeed is he who thinks a business holds for him no opportunity because he can not see it. He is doing good, faithful work, and he thinks he is not appreciated. He says, 'There's no chance for me here,' and throws up an excellent position. Perhaps his employer had plans in mind for him that were beyond his expectations. Perhaps he was only being tried. He could not possibly know his employer's mind, but because evidences of promotion did not appear fast enough to suit him, he lost his opportunity. The Japanese and the Chinese of the older school were artists as well as artisans. They worked for the love of working. Their keen interest lay in producing perfect work. Americans can learn a profitable lesson from the little people of the Orient in this regard. Dignify your work by the way you do it, not by the amount you are paid. Let no imperfect work pass from your hands. Always do your very best—always earn more than you get. Nothing in this world passes unseen, and if you are really more capable or brighter than others, you will be discovered readily enough. Women are more apt to do their work well, regardless of salary, than men. They are more timid, and more patient in waiting for recognition. They are anxious to give satisfaction and not too exacting in their demands."

Professor McKeever's new book on "Psychology and Higher Life" closes with the following beautiful spiritual creed: "To see the goodness in other people, and to help them find it in themselves; to be tolerant of the opinions of others, giving them credit whenever possible for sincerity of purpose; to be frank and open-hearted and honest in my dealings with others, showing a willingness to accord even a competitor a fair opportunity in the race of life; to deal fairly and affectionately with those who are in any sense criminal in their acts or tendencies, and to rebuke and criticise only in love; to respect and care for my body as a fit temple of the soul by temperance in eating and drinking, and to work hard enough to appreciate rest and recreation; to refuse utterly to worry unnecessarily about anything, but to strive at all times to entertain only pure and ennobling thoughts; to get good and give good everywhere, making somebody glad of my presence;—these are some of the affirmations that might profitably be made by those who are interested in a more spiritual type of consciousness."

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Local Notes.

The Washington county club enjoyed a social on Washington's birthday.

President Nichols made a business trip to Des Moines, Iowa, last week.

As we go to press (Saturday morning) the campus is thronged with visitors who have come to attend the Avery sale of Percherons.

The Printing Department is issuing a "Civics Guide-Book" for the History and Civics Department. Professor Price is the author of the work.

Roy A. Seaton, assistant in mathematics, enjoyed a visit with his parents over Saturday and Sunday. They came down from Jewell to attend the Avery sale.

The Alpha Beta society gave a reception to the A. B. Alumni Association, Professor and Mrs. Kammeyer and R. R. Birch, last Saturday evening, in Kedzie Hall.

Contractor Walter Stingley resumed work on the new Horticultural building with full force this week. The window and door frames of the basement story are now being set.

The College Y. M. C. A. and Y. W. C. A. intend to send a College delegation of a dozen members to the International Student Convention, at Nashville, February 28 to March 4.

The electrical engineers made a test of the College direct-connected electric generator on Thursday, running the machine at 25 per cent overload. The platted results will be published later.

Among the many visitors who thronged the College buildings and barns on Friday, we noticed the Hon. J. W. Robison, of El Dorado, president of the State Board of Agriculture, and the Hon. Wm. Fryhofer, of Randolph.

The Percheron sale of the famous Avery herd held Saturday, February 24, at the College barn was well attended. As the INDUSTRIALIST goes to press on Saturday morning we can not report the results, but have no doubt that they were satisfactory.

The third annual Y. M. C. A. banquet was held last Monday evening in the parlors of the Congregational church. Over one hundred members, in addition to about twenty invited guests, partook of the feast prepared by the ladies. Toasts were given by members of the association, Reverend Thurston, and President Nichols.

The cadet quartermaster, L. E. Gaston, has finished constructing two large revolving targets, which are to be placed on the range at the north end of Fifth street. Range practice at 200 yards will commence next week. Each cadet will be required to fire 20 rounds each, at 200 yards and 300 yards.

The girls of the short course in domestic science closed their practical work in preparing and serving dinner by feasting the wives of the members of the Faculty last Friday. To judge from the happy countenances of the women, the culinary efforts of the maidens must have been most satisfactory.

The Experiment Station of the College has just mailed Bulletins No. 130, on "Steer Feeding Experiments," and No. 131, on the "Care of Dairy Animals." Both bulletins were prepared by the Dairy and Animal Husbandry Department of last year, and contain a large amount of very valuable and highly practical observations and conclusions.

Ed Satterthwaite, son of ex-Regent J. M. Satterthwaite, of Douglass, who has been collector for the Santa Fe Railway Company at Guthrie for about a year, has been promoted to the position of cashier for the company at Oklahoma City. Mr. E. Satterthwaite was assistant in the College Printing Department six years ago, and the INDUSTRIALIST congratulates him on his successful career.

The annual reunion of the K. S. A. C. Association of Kansas City and vicinity will be held in the Pepper Building, third floor, Ninth and Locust streets, Kansas City, Mo., on Friday evening, March 9, 1906. There are a good many alumni and ex-students in Kansas City and vicinity, and there is no doubt that the meeting will be a grand success. Several members of the Faculty intend to be present and give short addresses.

Professor Kammerer was presented this week with a beautiful library rocker, a gift by last year's graduating class. The class had voted last year to give him this token of their esteem, but by some misunderstanding the committee had not acted. When the facts were discovered this winter the committee bought the handsome rocker and sent it up to his house, attaching an explanatory note. We congratulate the professor on the well-earned appreciation of his work. Teaching is a poor business from the financial standpoint, but at such times a teacher feels richer than a Rockefeller.

Mr. A. L. Rhorer, electric superintendent of the General Electric Company, of Schenectady, N. Y., wrote recently to Professor Eyer for four men from this year's class of electrical engineers, to take up work in the testing department of the company at Schenectady. Two graduates of the College are already in the employ of this company—Howard Mathews, '04, and Geo. T. Fielding, '03. The Western Electric Company, of Chicago, which has a number of our graduates in its employ, also wants more men, and other calls will probably come from other reputable companies in the larger cities.

The second annual concert of the K. S. A. C. Choral Union will be given March 8, at the Auditorium. This musical society was organized in October, 1904, by its present leader, Prof. Olof Valley. After seven weeks' practice it took part in the dedication of the splendid College Auditorium. The building has a seating capacity of 2500, and is one of the finest, if not the best, music hall in the State. In January, 1905, the officers of the Choral Union decided to give an annual concert. On March 16 of the same year the first concert was given, and proved to be a great success. At the coming concert the Choral Union will be assisted by Karin Lindskog, violinist, of Chicago; Olof Valley, basso; College Orchestra, under the leadership of Asst. Prof. R. H. Brown; College Glee Club; Cecilia Augspurger, pianist; Gertrude Eakin and Florence Sweet, sopranos; Katharine Ward, mezzo-soprano; Charles Sherman, baritone; E. C. Farrar and H. E. Porter, bassos; A. G. Philps, tenor, and Gertrude Hilliard, accompanist. The chorus will render selections from Haydn's Creation, Handell's Messiah, and Gounod's Faust. In the afternoon the College band will give a free concert. Rates may be secured on both roads into Manhattan.

Alumni and Former Students.

Chas. W. Shull, '97, has changed his address from Winona to Wallace, Kan.

Jens Nygard, '05, is visiting his sister and friends in town and College this week.

Messrs. Schowalter, Leonard, and Baird, who graduated from the Farmers' Short Course in 1902, came up to visit the College and attend the Avery sale.

J. F. Crowl, third-year student in 1899, has recently accepted a position as agriculturist with the Holly Sugar Company, which is building a new factory six miles from Rocky Ford, Colo.

M. F. Hulett, '93, is meeting with continued success in his practice as an osteopathic physician in Columbus, Ohio. It was recently his responsible duty to restore Governor Pattison, after the strain of his campaign.

Nicholas Schmitz, '04, asks to have his address changed from Ithaca, N. Y., to the Bureau of Plant Industry, Washington, D. C. Mr. Schmitz seems to be in the service of that bureau, but he is too modest to state in what capacity.

G. H. Failyer, '77, for so many years professor of chemistry and now assistant chemist in the Bureau of Soils, Washington, D. C., is one of the authors of Bulletin No. 31 of that Bureau, on "Colorimetric, Turbidity and Titration Methods Used in Soil Investigations." This gives detailed descriptions of methods of obtaining soil solutions for analysis, and of methods of analysis especially adapted to the estimation of very small quantities. The bulletin is a valuable one for all chemists engaged in the study of soils.

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No. 23

Corn Is King—America's Greatest Crop.*

CORN is distinctively an American crop, having its origin in central Mexico, where the native plant still grows wild. The United States grows 80 per cent of the corn crop of the world, and produces more bushels of corn than of all other grains. The average production of corn in the United States during the five years ending 1904 was 2173 millions of bushels, valued at 946 millions of dollars. The average farm price of corn has increased from 21.5 cents per bushel in 1896, the lowest average price ever received for corn in this country, to 44.1 cents per bushel in 1904. The average farm price of corn for the last five years, as given in the agriculture Year-Book, is a fraction less than 45 cents per bushel. The production of corn in this country has trebled since 1870, while the price per bushel has also advanced.

The area suitable for the production of corn is to-day largely occupied; there can be no great enlargement of our corn-fields unless the ground be taken from some other crop; the only material increase over our present corn production must come through enriching the soil, improving the breeds of corn, and from better methods of tillage and cultivation. With the corn-producing area limited practically to its present acreage, with the increasing demand for corn at home for feed, food, and for the manufacture of the large number of commercial products now made from corn, with the foreign market for corn increasing, Mr. Phillips of Wall street fame is making no wild prediction when he says: "We shall never again return to the old prices of corn; in my opinion 40-cent corn will represent its lowest price for the future."

Although the total production of corn in the United States has increased three hundred per cent in the last thirty years, the average yield per acre has not increased, and as given in the agriculture Year-Book is only 26.8 bushels per acre in 1904. The average yield per acre in the United States, for 10 years, 1895-1904 is 25.0 bushels, while in Kansas for the same period the average yield is

*Rock Island corn and wheat train lecture, by A. M. Ten Eyck, Professor of Agriculture
K. S. A. C.

only 21.65 bushels per acre. The opportunity for increasing the average yield of corn per acre is very great. One kernel of corn will produce an ear having from 800 to 1200 kernels. No other cereal grain is so productive. No crop which the farmer raises is more responsive to breeding and cultivation than corn. Every intelligent effort which the farmer makes in selecting seed, in fertilizing the land and in improving the methods of planting and cultivation is rewarded in both quality and quantity of grain produced. Improving the quality and increasing the yield of corn by planting well-bred seed and by practicing better methods of cultivation may be counted as almost clear profit. Mr. Luther Burbank, the great plant breeder of California, estimates that one extra grain to the head, one extra kernel to the ear, and one more potato to the hill would increase the crops of the Nation, without extra cost, by

1,500,000 bushels of barley,
11,000,000 bushels of corn,
15,000,000 bushels of wheat,
20,000,000 bushels of oats, and
21,000,000 bushels of potatoes.

An increase of three bushels of corn per acre in Kansas would pay the State and county taxes (some \$7,000,000 per annum) and leave a margin of \$800,000 for building up our State institutions and making other public improvements.

The most important factors in the production of any crop are feed, breed, and care or culture. Without a sufficient supply of available plant food and moisture in the soil it is not possible to produce large yields of corn, no matter how well bred the seed, even with the best of culture. The plant must be fed. Hence, one of the most important problems in growing corn is maintaining the fertility of the soil. Much of the land of Kansas has already been cropped continuously with corn too long. Such land is "corn sick," the soil has become exhausted of its humus, compact in texture, filled with plant diseases and insects which prey upon the corn plant, and has finally reached that point where profitable crops can no longer be produced upon it without a change in the methods of farming. What the land needs more than anything else is a change of crops, and it will not do to simply sow wheat and other cereal grains for a year or two and return again to corn, since the small-grain crops are really greater exhaustors of the fertility of the soil than is corn; such land must be planted to grass and perennial legumes, such as alfalfa and clover. Grass is a soil protector, a soil renewer, and a soil maker. It increases

the vegetable matter in the soil, restores the humus, and improves the soil texture; while alfalfa and clover, by means of the bacteria which grow on the roots of these plants, actually increase the nitrogen in the soil, which is the most essential element of plant food and the one most apt to become exhausted in the soil. Old worn-out land which has been seeded to grasses and legumes for a few years is largely restored to its virgin condition of tilth and fertility, and when broken will produce again large crops of corn and grain.

Farmers should study more carefully the subject of rotation of crops and means and methods of maintaining the fertility of the soil. Barnyard manure should be more carefully saved and used. On the Agricultural College farm, in the season of 1903, a good coat of barnyard manure applied to corn land and plowed under increased the yield of corn 18 bushels per acre. It is not advisable to use chemical fertilizers and neglect other and cheaper means of restoring and maintaining the fertility of the soil.

I can not here go into a detailed discussion of soil tillage and cultivation. It has been truly said that "tillage is manure" to the soil; the plant food is stored in the soil in an insoluble or unavailable condition. By tillage the conditions are made favorable for the development of the soil fertility. The cultivation allows the entrance of the air, conserves the moisture, warms the soil, and makes favorable conditions for the growth of bacteria, and thus hastens the decomposition of organic matter and favors the chemical changes by which the unavailable plant food is gradually made available for the use of crops.

Weeds are robbers; they waste the moisture and fertility of the soil, and thorough cultivation of the corn crop is necessary in order to keep the field clear of weeds. Water is the most essential part of the plant food; the rainfall, in time and amount, largely determines the yield of the crop. By keeping the surface mulch the water is retained in the soil and made to feed the crop.

At several experiment stations shallow continuous cultivation of corn has given the largest average yields, as opposed to deep cultivation. Too deep cultivation not only injures the corn by destroying the roots, but during the period of cultivation it prevents the roots from feeding in the most fertile part of the soil. On the other hand, the practice of shallow cultivation may be carried too far; a relatively thick mulch of soil will conserve more moisture than a thin mulch. As regards the conservation of soil moisture, the early cultivation of corn may be shallow; a deep soil mulch is not required at that season of the year, since the weather is moist

and cool and evaporation is not great; but later in the season when the hot, dry days of July and August come the deeper mulch is necessary in order to keep the soil from drying out. Shallow cultivation early in the season also clears the ground of weeds better than deeper cultivation, and a thin mulch may favor the quicker warming of the soil in the spring. Loose soil is not so good a heat conductor as firm soil, and more heat can reach firm soil through a thin mulch than through a thick mulch. On the other hand, during the hot part of the season a thick mulch may act as a regulator of the soil temperature and prevent the soil from becoming too hot, as well as too dry. Cultivation experiments at the Kansas, Illinois, and North Dakota Experiment Stations have given results favoring shallow cultivation early followed by *medium* deep cultivation at the close of the season. Deep cultivation as the corn was laid by seems to have conserved more moisture than shallow cultivation, and at the Kansas Station as an average for three seasons has given an average yield of 2.7 bushels of corn per acre above the yield secured by continued shallow cultivation.

It pays to prepare a good seed-bed for corn as well as for wheat or other crops. As to whether level planting or listing is best depends largely on the climate and soil. Throughout central Kansas the listing method is preferred; the roots of corn planted in lister furrows lie relatively deeper in the soil than roots of level-planted corn, and in a dry climate or light soil corn planted in this way is better able to withstand drouth than level-planted corn.

Perhaps less attention has been given to the breeding of corn and the selection of seed than has been given to the cultivation and maintaining of the soil fertility. The work of the last few years, however, demonstrates that it is just as important to breed corn and wheat and other crops as it is to breed stock. Moreover, the effect of the breeding and selection of corn is as great and the results are much more quickly secured than in the breeding of stock.

There is a great difference in the productiveness of varieties of corn. In 1903, in a test of 79 varieties at the Kansas Station, the yields of what were considered standard varieties varied from 30 to 89 bushels per acre. Similar results were secured in 1904. Different ears of corn not only vary in appearance and quality, but are very different in their prepotency or power of reproducing. The choice selected ears from Reid's Yellow Dent corn, which were selected for uniformity and trueness to breed characteristics, showed as much differences in characters of plants on different rows as might be observed between different varieties of corn,

and in 1903 a difference of nearly 400 per cent in yield, (per cent figured on lowest yield) was produced by the same area of land planted with seed from individual ears. In 1904 the greatest range in yield with selected ears of this variety was a little over 80 per cent, while in 1905, after 3 years of careful breeding and selection a difference in the productiveness of individual ears, seed selected from the product of the best producing ears during previous years, showed a variation in product of only 60 per cent. After three years' breeding, the ear test plot in 1905 yielded 18 per cent more corn per acre than was secured from the general field planted with first-grade seed selected from the general crop the year previous.

The first step in corn improvement is the choice of a variety. Choose as pure a type of corn as it is possible to secure, a variety which is adapted for growing in the soil and climate of your section of the State. Choose a type of corn that is hardy, of good quality, and that yields well. From the tests at the State Experiment Station, the "native" Kansas corns, namely, varieties which have been grown a long time in the State, prove to be better producers than the best varieties imported from other States. Perhaps you are now growing in your locality the corn which is best adapted for growing there, and which will furnish an excellent foundation for a better breed of corn. Scientific corn breeding has only been practiced in this country since 1897, when Prof. P. G. Holden, at the Illinois Experiment Station, introduced the plan of individual ear breeding and demonstrated the importance of corn breeding to the farmers of that state and to the country at large. Among the pioneer breeders of corn are Leaming, of Ohio, Reid, of Illinois, and Riley, of Indiana, and from their efforts and work we have the Reid's Yellow Dent, the Leaming, and the Riley's Favorite corn. The Boone County White is another of the old standard varieties. These varieties of corn have proved to be good producers in many parts of Kansas, after the corn has been grown for several years and become adapted to the climate and soil.

The Kansas Corn Breeders' Association, at its annual meeting, March, 1905, passed the following resolutions:

Resolved, That the following varieties of Kansas corn be recognized by the Kansas Corn Breeders' Association as possessing merits which make them worthy of distribution and propagation in this State, namely, Hildreth (yellow dent), McAuley's White Dent, Hammett (white dent), Mammoth White Dent, Kansas Sunflower (yellow dent), Griffing Calico and Hiawatha Yellow Dent.

Resolved, That the following varieties of corn originated in other states be recognized as suitable for planting in this State, provided the seed has been adapted to Kansas conditions and the corn has maintained its quality and productiveness after having been grown for five successive seasons in this State; namely, Reid's Yellow Dent, Boone County White, Silver Mine, Legal Tender, Hogue's Yellow Dent, and Leaming.

Choose a field to grow seed-corn away from other fields. Give special preparation to the soil and special cultivation to the corn. Plant at the most favorable season, using all efforts to produce as perfect a development of the corn as possible. If a field away from the general corn-field can not be selected, then plant a strip through the middle of the large corn-field for the breeding plot. The average farmer may not be able to follow the individual ear system of breeding, but he can select out of his seed-corn a bushel or so of the choicest ears and plant this corn in a body by itself, as described above. Better select out 40 or 50 of the very choicest ears and plant the corn from each ear on separate rows. In this way the breeder is able to determine which are the best producing ears and select seed from these for future planting. When the corn is tasseling and beginning to silk, pass through the field and remove the tassels from the stalks which show no appearance of a shoot and from every feeble and diseased stalk in order to breed only the best. In this way the farmer really selects his breeding corn plants, the same as he selects his breeding animals. Seed-corn should be selected in the field so that the breeder may observe the stalk as well as the ear. Select for uniformity in stalk and ear, choosing ears which are well placed on vigorous leafy stalks. Select for uniform maturity of ears as well as for uniformity in type, size, and quality.

Seed-corn should be stored, and cured in a dry, well-ventilated room, and if the weather becomes damp and cold before the corn is fully dry, complete the drying by artificial heat. Corn well dried and kept in a dry place will not be injured by freezing.

During the winter the seed-corn should be carefully sorted over and the breeding ears for next season's seed field selected. We have to-day score-cards for corn, by which the perfect ears of different varieties are required to conform to a certain standard as regards size, length, type, uniformity, etc. Perhaps the breeders have not yet learned to recognize all the vital points of a good ear of corn, but some of the characteristics which indicate good quality and high yield in corn are known. The ear should be of good size, symmetrical in form, with straight rows of long,

well-dented, medium wedge-shaped kernels. A cylindrical ear allows for more kernels on a cob and a more uniform length in kernels. The tips should be well filled, and at the butts of the ears the kernels should swell out about the shank. The space between the crowns of the kernels should be narrow; also there should be no unoccupied space at the tips of the kernels where they enter the cob. The kernels should also be uniform in color, either white, yellow, or red, according to the type and variety of corn which they represent. A large germ in the kernel indicates vitality and high feeding value, since the germ of the kernel contains nearly all of the oil in the grain and is also rich in protein.

A large yield of corn depends not only on the breed of corn, the fertility of the soil, and the cultivation of the crop, but it also depends upon the germination of seed, stand of corn, and number of ears produced per acre, as well as the type of ear and the type of kernel on the ear. It therefore becomes very important to plant viable seed, and every farmer should test the germination of his seed-corn before planting. The actual yield of corn per acre is usually far less than the estimated yield. For instance, with a perfect stand of corn, hills $3\frac{1}{2}$ feet apart, and three stalks in the hill, with one good average ear to the stalk weighing $\frac{3}{4}$ of a pound, the yield should be 128.5 bushels of shelled corn per acre. With ears weighing one pound apiece the possible production from an acre of land, under the conditions stated above, is 171 bushels.

A 30-bushel crop of corn will just pay for the growing. When we consider the fact that a bushel of seed-corn will plant 8 acres, and is capable of producing, on good soil in the average season, with good average cultivation, 400 bushels of corn, we begin to appreciate the value of this bushel of seed-corn. The farmer can afford to do a great deal of work in growing seed-corn, selecting the seed ears, grading and scoring these ears, and testing the germination of the seed previous to planting, that he may secure a good stand and insure the production of a profitable crop.

The College held a series of farmers' institutes on the Frisco railroad last week. The institutes were in charge of J. H. Miller, the secretary of farmers' institutes, and the subjects emphasized were "Corn Breeding" and "Dairying." The itinerary was as follows: Monday, February 26, Lenexa; Tuesday, February 27, Spring Hill; Wednesday, February 28, Paola; Thursday, March 1, Girard; Friday, March 2, Columbus; Saturday, March 3, La Cygne.

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Local Notes.

The Department of Domestic Science has lately received a fine bronze medal for its exhibits of domestic science products at the Louisiana Purchase Exposition.

The Veterinary Department is experimenting once more with the old problem of curing the so-called blind staggers of horses, which is caused by corn mould.

Doctor Schoenleber reports that he is getting very encouraging results from his hog cholera remedy which he sent to different breeders all over the State during the fall and winter.

The College band went to Wakefield last Tuesday to give a concert. The band numbers about 35 members and is in first-class trim. Assistant Professor R. H. Brown, who directs the band, says that he receives frequent invitations to give concerts.

Asst. G. C. Wheeler, of the Animal Husbandry Department, went to Clay Center on February 22 to attend the first annual meeting of the Northern Kansas Poland China Breeders' Association, where he presented the subject of "Score-Card Judging."

Assistant Freeman gave a very interesting lecture Saturday night in the botany class room to members of the TS² club and invited friends. His subject was "Life and Work of Luther Burbank." The lecture was illustrated with lantern slides.—*Students' Herald*.

A. N. H. Beeman, '05, who has been working in the Printing Department part of his time for several years, has left for St. Louis, where he expects to enter the newspaper field. Beeman is a good writer and a first-class printer. We are certain that he will make a high-grade newspaper man.

Pres. E. R. Nichols went to Concordia to-day (Saturday) to take part in the program of the opening of the new creamery. Prof. O. Erf, who is out this week with the dairy institute train, will attend also. The President will speak on the "Importance of Dairying to Kansas," and the professor will speak on the "Dairy Cow and Her Feed."

Avery & Son's public sale of Percheron horses at the College Saturday, February 24, is conceded to have been the biggest sale ever held in Kansas. The aggregate amount received for forty-one head was \$24,265. A large number of young colts lowered the average, the record-breaking price for stallions being paid by J. H. Peak, of Manhattan, for Bosquet, the imported Percheron stallion, \$2825. J. H. Tangeman, of Newton, Kan., paid the highest price for a pair of mares, the amount being \$2250.

First Church of Christ Scientist has a reading-room in the Fielding building, on north second street. A cordial welcome is offered to the public. Authorized Christian Science literature may there be read and purchased. The room is open every afternoon, except Sunday, from 2 to 5 o'clock.

J. Clyde Rickman, who has had charge of the pressroom of the College Printing Department for four years, and who was a student employee in the department for two years previous, has resigned his position to assume the business management of the No Dust Company, of Manhattan, at an increased salary. His place has been filled by the appointment of P. G. Crow, lately of Topeka. Mr. Crow commenced work on March 1.

The second of the series of cross-country runs was run last Tuesday and Milligan, who was first in the run week before last, again came out ahead. Bealey was second. The course lay from the Agricultural Hall north to Zuck's bush, thence to the reservoir on Bluemont, and back to the starting point, a distance of a little over three miles. The time made last year was 21:23. Milligan's time was 19:36. Purdy was third.

Prof. A. Dickens went to Fort Hays Branch Experiment Station, Saturday of last week, to look after the orchards and timber plantations and give orders for the necessary spring work. The College has started at Hays about twenty acres of experimental native trees—such as elms, catalpas, oaks, hackberries, maples, and honey locusts—and about four acres of orchard. The professor reports that the trees are in an unusually thrifty condition.

Asst. Prof. J. O. Hamilton was badly injured by a fall from a ladder last Monday. He climbed the ladder in the Physical Science Hall to repair the electric bells. The ladder slid out at the bottom causing him to fall. He was taken to the Parkview hospital. One wrist and an upper maxillary bone were fractured, several bad gashes were cut on his head, and his body was badly bruised. His injuries, while very painful, will not prove serious.

Lecturer S. W. Gillilan, who spoke last year at Manhattan, publishes a poem about his "Kansas Hoodoo." He claims that he can lecture in every state except in the dry state of the golden Helianthus. The poem begins:

There's a hoodoo that pursues me out in Kansas,
And it seems I can't escape it anyway;
'Tis the sort of persecution that unmans us,
By relentlessly pursuing, night and day.

However, he excepts Manhattan and Wichita. His last stanza reads as follows:

Now I haven't any spite at sunny Kansas,
And I like her blessed people, every one,
But no Spaniard that was captured at Matanzas
Suffered worse than I when giving Kansas fun.
There are places such as Wichita, Manhattan,—
Where the hoodoo seemed to leave me for awhile,
But in thinking, first of this place then of that'n',
I am hoodooed when I'd make the Kansans smile.

Alumni and Former Students.

M. V. Hester, '94, has moved to Huron, Ohio, where he is engaged in teaching. He was married to Miss Nellie Chapin of that place in June, 1905.

Jens Nygard, '05, has settled down to farming and stock raising near Vesper, Kan. He realizes the dominant position that holders of land will have in the near future.

W. W. Stanfield, '05, is now on the force of the *Farmers' Advocate*, Topeka, Kan., and hopes to make things interesting as well as profitable. He spent Sunday, February 25, in Manhattan, visiting friends.

C. D. Adams, '95, will have his business headquarters after March 1 two miles from Swope Park, Kansas City. He will be manager of a 280-acre fruit farm, and his address will be Hickman's Mills, Mo., R. F. D. 34.

Born, February 25, to Mr. and Mrs. C. A. Kimball, a daughter. Mrs. Kimball was known in College as Matie Toothaker; C. A. is of the class of '95. They now live in Manhattan, where Mr. Kimball is one of the publishers of the *Republic*.

P. K. Symns, '01, and A. B. Symns, '98, now get their mail at R. F. D. No. 5, Troy, Kan. They watch with interest the constant development of the College, although somewhat at a distance. They are in good health, with plenty to do, but report Fred Zimmerman, '98, as not so well this winter.

Stanley Snyder, '89, and Ralph Snyder, '90, took advantage of the opportunity afforded by the Avery sale to visit the College, after an interval of a number of years. They are prosperous farmers in Jefferson county. Ralph has a wife and family to assist him, while Stanley is struggling along as an old bachelor.

On another page appears an account of the great sale of Percheron horses by Henry Avery & Son. The junior member of the firm is H. W. Avery, '91. We have no information concerning Mr. Avery's plans for the future, but after handling Percheron's thus far, and with such success, it would seem difficult to keep away from them.

The *Nationalist* of March 1 prints some very interesting letters from Augusta (Griffing) Harlan, '04, written to the home folks while on her way to the Philippines with her husband H. V. Harlan, '04. Mr. Harlan will teach agriculture in a normal school at Ilo Ilo, on the island of Panay. This port has a population of about 60,000, and is the second in importance in the islands.

J. E. Payne, '87, has accepted a position in the irrigation investigations of the office of Experiment Stations, Washington, D. C. His work will be especially a study of the advantages of irrigation as compared with dry farming, and will be principally in Montana. He leaves within a few days to take up the work. With his family he has spent the winter here, and recently has been assisting Professor Ten Eyck.

Earl Wheeler, '05, has recently been appointed instructor in electricity in the graduate school for junior officers of the engineering corps of the United States army. Those coming under his instruction are first lieutenants and are chosen from the first five in their respective classes. During the fall Mr. Wheeler was studying at Cornell University in senior and graduate classes.

Harvey Adams, a member of the class of '05, K. S. A. C., has been appointed to a third lieutenancy in the constabulary department of the Philippines, for which place he will leave soon. This is the second appointment from last year's class, Jay Worswick, [']05 having been named a short time ago. Only college men are eligible to appointment, and the naming of two men from this institution reflects credit not only upon Captain Shaffer of the Twenty-fifth United States Infantry, who is in charge of the Military Department, but the whole school. Twenty-five men were to be appointed, and names were sent from colleges all over the United States.—*Mercury*.

Harold T. Nielsen, '03, and John Tompkins, junior 1902, were seeing the College together last Friday. Mr. Tompkins was looking for some good young creamery men in the interests of the Continental Creamery Company, with which he has a responsible position. Mr. Nielsen stopped off on his way to Washington, to which he is returning after spending the winter at work in California and Arizona. He is in the Bureau of Plant Industry and has been studying more especially cover crops used in California orchards. He will be busy on the Arlington Farm, near Washington, for the next few months. While in California he called on Emma Finley, '97, who is teaching in Pomona, and Isaac Jones, '94, a successful fruit grower at Etiwanda.

F. A. Dawley, '95, Waldo, Kan., on February 14 sold forty-three head of Poland China swine for \$3281. The *Farmers' Advocate* has this to say concerning the sale: "F. A. Dawley's sale is one every breeder of Poland Chinas, not only in Kansas but all over the West, has been looking for. It was held on St. Valentine's day, at Osborne, Kan., and was a real genuine valentine—one that puts a broad smile on one's face—to Frank Dawley. The good prices were not a surprise to Mr. Dawley. He has been enjoying the blissful three-figured prices for a good many sales, but never has he driven into the sale ring so many that passed into the three-figure column. The sale was attended by a large local crowd, and the number of breeders present would probably number over fifty. J. R. Stewart & Son, Portis, Kan., topped the sale on Ophelia, a yearling sow sired by Grand Chief. Ophelia brought \$251. She will be a valuable acquisition to the Twelve Mile herd. Nine of this offering sold for \$100 each or better. It has probably been a decade or more since a record such as Mr. Dawley's has been made in Kansas. Not since the days when C. S. Cross, of Sunny Slope, sold Poland Chinas at Emporia has a Kansas farmer and breeder sold a consignment of pure-bred hogs at the average reached at Osborne, February 14."

Weather Report for February.

The weather report for February, 1906, according to observations taken at the Kansas State Agricultural College, is as follows:

The month was marked by high temperatures, high barometer, bright clear days, and practically no snow. The mean temperature for the month, 35.65° , was rather high for February, the mean for the 48 years recorded being 29.63° . The mean for February, 1905, was 20.48° . The mean maximum temperature for February, 1906, was 49.53° ; for the previous 47 years recorded, 40.20° .

The mean minimum temperature was 21.78° ; for previous years recorded, 18.21° ; for February, 1905, it was 8.71° .

The highest temperature recorded for the month was 74° on the 22d, this being the highest temperature for February during the past 48 years. The lowest temperature was 0° on the 5th. The greatest daily range of temperature was 44° on the 21st. The total rainfall and melted snow was 1.6 inches. Only about .06 inches of snow fell. There were 15 clear, 7 partly cloudy and 6 cloudy days during the month. The mean wind direction was southwest. The highest barometer was 29.44 on the 5th, and the lowest 28.53 on the 22d. The mean barometer for the month was 29.05, which, with one exception, is the highest mean barometer recorded for February, the mean barometer for the 48 years being 28.86.

Peach buds are advancing rapidly, due to warm weather.

The Avery Sale of Percherons.

Henry Avery & Son, of Wakefield, Kan., held the closing-out sale of their great herd of Percherons at the Kansas State Agricultural College on Saturday, February 24. The bidding began at about 1:00 P.M., and was preceded by an interesting speech by the auctioneer, Col. F. M. Woods, of Lincoln, Neb. He was assisted by Cols. L. R. Brady, of Manhattan, and R. L. Harriman, of Bunceton, Mo.

The sale included the great herd and show stallion Bosquet 40105, and he certainly was a beauty. He recently defeated the first- and second-prize winners at the St. Louis World's Fair. The world's champion mares, Lena 40417 and Mina 31721, were in the bunch. They have never been defeated in the show ring. The champion gold medal group of five mares, undefeated winners of the Percheron Association \$100 gold medal twice during the show season of 1905, were in the sale, which also included the winners of 69 other ribbons and gold medals. All medals and ribbons went with the purchase. Some nicely matched pairs of mares and a good many successful brood mares well broken to work were offered.

The total amount of the sale was \$25,332.50. Average of forty head, many of which were colts less than a year old, \$602. The great Bosquet brought the record-breaking price of \$2825. He went to J. H. Peak, of Manhattan. This price beats all previous

public sale records by \$625. Lena and Mina went to J. H. Tangerman, of Newton, Kan., for \$2250.

The sale was attended by buyers from all over Kansas, and from Nebraska, Colorado, Indian Territory, Iowa, Illinois, and Missouri. Others from other States did not figure in the purchases. The arena in the College barn was packed to its utmost capacity. Many ladies attended the sale. Owing to the size of the crowd, the students were not admitted. They, however, had previously had the privilege of a week's work in judging this splendid collection of pure-bred animals.

The dairy special, a train consisting of a baggage car, two coaches and a tourist sleeper, left Atchison last Tuesday to make a tour of thirty-seven towns through a portion of Kansas and Southern Nebraska. The train was run by the Atchison, Topeka & Santa Fe Railroad Company, under the auspices of the Kansas State Dairy Association. The trip ended at Superior Neb., Friday evening, covering in all a distance of 437 miles. The territory included is the richest dairying country in the Middle West. From it 25 million dollars' worth of cream is produced annually. The purpose was to assist the dairy business, to inform the men interested in the business how to conduct it in the most profitable and at the same time most scientific manner. Lectures were being made by men of national reputation as dairy experts. The dairy special was proposed and perfected by I. D. Graham, secretary of the Kansas State Dairy Association, with the assistance of James M. Connell, general passenger agent for the Santa Fe. The following lecturers started with the train at Atchison: Prof. A. L. Haecker, chief of the dairy department of the University of Nebraska; Prof. Oscar Erf, chief of the Dairy Department of the Kansas State Agricultural College at Manhattan; L. G. Humbarger, of St. Joseph, Mo.; E. H. Webster, of Washington, chief of dairy division United States Department of Agriculture; W. W. Marple, of St. Joseph, Mo., president of Missouri State Dairy Association; E. W. Curtis, of Kansas City, formerly of the Kansas Agricultural College, and T. A. Borman, of Topeka. In all there were thirty-five men making the trip. A stay of fifty minutes was made at each town, two lectures of twenty minutes each being given at each place. At Nortonville, Kan., one farmer said he had left his home at 4 o'clock in the morning and had driven fifteen miles in the mud to be present.

The Printing Department is printing Experiment Station Bulletins Nos. 132 and 133. The former treats of "Western Feeds for Beef Production," and was prepared by Foreman O. H. Elling, of the Fort Hays Branch Experiment Station. The latter is the work of Prof. H. F. Roberts, of the Botanical Department of the College, and is on "Alfalfa: Its Adulterants, Substitutes and Impurities, and their Detection."

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THE INDUSTRIALIST.

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No. 24

Proper Names as a Source of our Vocabulary.

I. PERSONAL NAMES.

SINCE the days of good King Alfred the English vocabulary has increased twentyfold. For the most part this increase has come about through wholesale borrowings from foreign languages and through multiplication of our stock of words by the use of prefixes and suffixes. Many other factors have played their parts in this growth, and it is with one of these minor factors, the indebtedness of our vocabulary to the great store of proper names, that this paper is to deal. The following lists are not intended to be exhaustive, but it is hoped that they will be fairly representative. The Century Dictionary is taken as the authority in each case, both as to the source of the word and as to whether or not it should still be written with a capital.

1. *Given Names (Christian Names).*—A cape, lace is the meaning of bertha, berthe, from the proper name Bertha. A man who engages in female occupations is called a betty, derived from the personal name Betty, diminutive of Bet, abbreviation of Elizabeth. Billy, a policeman's club, is probably an application of Billy, dim. of Bill, a corruption of Will, which is short for William. The term charlotte, a sweet dish, is from Charlotte, feminine of Charlot, dim. of Charles. Davit, also davitt and formerly david, a nautical term, is supposed to stand for *daviet, a dim. of David, it being customary to give proper names to implements; compare billy, jack, jimmy, etc. Jack, being extremely common, came to be used as a general term for a man of common or menial condition. Hence we have jack used alone and in compounds a purely common noun, as the name of contrivances which do the work of a common servant or are subjected to rough usage. Beside jack with about two dozen meanings there are also jackadandy, a fop, jackanapes, a coxcomb, jack-arch, jackass with its compounds, jack-at-the hedge, a plant, jack-back, a tank, jack-block, jack-boot, etc. A particular use of the name Jacob is seen in jacob, starling. Jemmy, a short crowbar, smart, is diminutive of Jem, Jim, from James. The word jenny is a familiar use in various senses of Jenny, dim.

of Jane. One who erects flimsy buildings is called a jerry, probably from Jerry, familiar abbreviation of Jeremiah. Jill, with gill and the diminutive jillet, is from Juliana, a common name which came to be used generically for a young woman, a girl. Jill-flirt and jilt (*i. e.* jillet) have the same source. Jim-crow, a tool, and jimmy, a crowbar, are from James; see jemmy. North English and Scotch Jock, Jocky, corresponding to our Jack, Jacky, a common appellative of lads in service, grooms, etc., have given us jock and jockey. Joe, a four-penny-piece, a lobster, is from Joe, short for Joseph; joe, also jo, a Portuguese and Brazilian coin, is from Jo, an abbreviation of Lat. Johannes, John. The name of a mineral, johannite, is from Johannes, with suffix -ite. John, extremely popular as a given name, was therefore, like Jack, commonly applied to a man or boy in a menial condition. Apple-john (also john-apple), a variety of apple, johnny, a fish, a bird, johnny-cake, john-paw, a fish, etc. are derivatives. The mineral laurite was so named after a lady whose Christian name was Laura; the mineral lawrencite was so called in honor of Dr. J. Lawrence Smith, of Louisville, Kentucky. Mag and its assimilated form madge, magpie, are from Mag, Madge, abbreviations of Margaret. The peculiar varied diminutive reduplication, namby-pamby, is an allusion to Ambrose Philips, a sentimental poet whose style was ridiculed by Carey and Pope. Nan, an earthen jar, nanny and nanny-goat show the use of Nan (variative of Ann) and its diminutive. The bird-name peggy is a familiar use of Peggy, dim. of Peg, a variation of Meg, Mag, which in turn is an abbreviation of Margaret. Malkin, mawkin, slattern, etc., is diminutive of Mal, a reduced form of Mary, and also of Matilda. Grimalkin and gray-malkin are varied forms of the same word, the second element being the malkin given above. Philopena, philippine, a game, is from the feminine form of Philipp (Philip). Timothy-grass, timothy received its name from Timothy Hanson, who carried the seed from New York to the Carolinas about 1720. The word tom is from Tom, familiar form of Thomas, used generically and ordinarily implying contempt: as, tom-fool, tom-boy, etc. It is also used, as is jack, to denote a male animal: so tom-cat, tomeling. It is found further in tom-noddy, tom-pudding, tom-tit, etc. The term zany, a comic performer, is from Ital. zanni, zane, a zany or clown; the Italian form quoted is an abbreviation of Giovanni, John.

2. *Bible Characters and Saints.*—Barnabas gives us the term barnabee, lady-bird. The apple-name jenneting conforms in the ending to other apple-names, as hasting, sweeting, etc. and the first part is derived from Jeannot, the old French dim. of John; it was

so called, it seems, because in certain localities it ripened as early as St. John's day (June 24th). Jeremiad, jeremiade, lamentation, from Fr. *jeremiade*, is formed by suffixing -ad (cf. *Iliad*) to Jeremiah, and is so called in reference to the "Lamentations of Jeremiah." The provincial English name of a large bowl, *jeroboam*, is an allusion to *Jeroboam*, "a mighty man of valor," 1 Kings XI 28. Joseph, a kind of coat, is named with reference to Joseph's coat of many colors. The term for a leper, *lazar*, is from Lazarus, the name of the beggar in the parable, Luke XVI 20. This has given rise to about a dozen words of our vocabulary. Magdalen, magdalene is named from Mary, Magdalene, *i. e.*, Mary of Magdala, a town on the Sea of Galilee. From the same source we have the contract form *maudlin*, tearful, etc. Martin, martinet, a swallow, refers to St. Martin. The word for trafficking in sacred things, simony, is derived from Simon Magnus, because he wished to purchase the gift of the Holy Ghost with money. Tawdry is originally from the phrase *tawdry lace*, *i. e.*, Saint Audrey lace, lace bought at St. Audrey's fair, held at the shrine of St. Audrey in the isle of Ely, England. The designation valentine is probably derived, as is popularly supposed, from St. Valentine; the exchange of valentines takes place on February 14, the day of St. Valentine.

3. *Mythological Personages*.—Our term *atlas* is identical with Gr. Lat. *Atlas*, one of the gods, later one of the Titans, condemned to bear up the heavens, or, in other forms of the legend, the earth. The adj. *herculean* alludes to the labors of Hercules. The vehicle-name *phaeton* goes back ultimately to Gr. *Phaethon*, son of Helios (the Sun), who obtained leave from his father to drive the chariot of the Sun but made a botch of the business. *Vanadium*, a chemical element, was so named by Sefström, the name being taken from *Vanadis*, one of the goddesses of Scandinavian mythology. *Vulcanism*, *vulcanize*, etc. go back ultimately to Lat. *Vulcanus*, *Volcanus*, the god of fire.

4. *Characters from Fiction*.—*Benedick*, *benedict*, a sportive name for a newly married man, is an allusion to *Benedick*, one of the characters in Shakespeare's play of "Much Ado about Nothing;" especially to the phrase, "Benedick, the married man." *Bumbledom*, fussy official pomposity, is named from *Bumble*, a character from Dicken's "*Oliver Twist*." The designation *knickerbockers* for knee-breeches is from *Diedrich Knickerbocker*, the pretended author of Washington Irving's "*History of New York*." *Don Quixote*, the hero of Cervantes romance of that name, is responsible for our *quixotic*, *i. e.*, pertaining to or resembling Don

Quixote. Simon-pure is so called in allusion to Simon Pure, a character in Mrs. Centrevre's comedy, "A Bold stroke for a Wife," the "real Simon Pure" as distinguished from an impostor. The head-dress, tam o'shanter, receives its name from Tam o'Shanter, the hero of Burns' poem of that name.

5. *Famous Historical Characters.*—Field-marshall Blücher, of Waterloo fame, has given us the name of a shoe, blucher. The term bobby for policeman is from Bobby, diminutive of Robert, alluding to Sir Robert Peel; see also peeler. The designation brougham for a variety of carriage refers to the first Lord Brougham. Garibaldi, a shirt-waist, also a fish, is from Garibaldi, the Italian soldier. A certain fish which became well known about the time of Lafayette's last visit to the United States received the name lafayette. A gold coin of France, the louis, was named for Louis XIII. The term mausoleum, any splendid tomb, referred originally to the tomb of Mausolus only. The French coin napoleon was so called after Napoleon Bonaparte. The word peeler for policeman goes back to the English statesman Sir Robert Peel; compare bobby. The head-dress, also mode of dressing the hair, pompadour, is named after Marquise de Pompadour, influential at the French court in the middle of the 18th century. The philippic, an invective, has its name from the orations delivered by Demosthenes against Philipp, king of Macedon. Lord Raglan, commander-in-chief of the British forces in the Crimea, is accountable for the term raglan, an over-coat. And good Queen Vic has bequeathed us the designation victoria for a certain kind of a carriage.

6. *Names of Minerals.*—Algarot, algaroth, a chemical, is derived through Fr. algaroth from the name of the Italian inventor Algarotti. A long series of minerals has in each case the suffix -ite added to the name of the man who first found, described, or was otherwise connected with the mineral mentioned. Thus we have allanite (Thos. Allan, discoverer), barcenite (Prof. Barcena of Mexico), davite (Sir Humphrey Davy), davreuxite (Charles Davreux, Belgian chemist), fuchsite (Johann N. Fuchs, mineralogist), gersdorffite (von Gersdorff, proprietor of a nickel mine where this mineral was first found), gmelinite (Gmelin of Tuebingen, Germany), jeremejeffite (a Russian mineralogist), kupfferite (Kupffer, Russian physicist), latrobeite (O. T. Latrobe), laumontite (Laumont, its discoverer), laxmannite (Laxmann, Swedish chemist), lederite, ledererite (Baron Lederer), newberyite (J. C. Newbery, of Melbourne), phillipsite (W. Phillips, English mineralogist), schreibersite (Carl von Schreibers, of Vienna), schroetterite (Schroetter, who first described it), schulzite (Guillaume Schulz, a French geologist), schwartzemberg-

ite (Schwartzemberg of Copiapo, Chili), smithsonite (Jas. Smithson, founder of the Smithsonian Institution), vauqueline and vauquelinite (Vauquelin, French chemist).

7. *Miscellaneous Surnames.*—To this last list under surnames belong inventions named after inventors, practices and customs named after the instigators or victims of the same, and those names connected in still other ways with the surnames which they represent. The London merchant, Wm. Banting, adopted and recommended the course of diet known as bantingism. Boycott is from the name of the first prominent victim of the system, Captain Boycott, a farmer at Lough Mask, Ireland. The tool burgoyne is named from the inventor. The word daguerreotype with its derivatives, is from Daguerre of Paris, the inventor of the process. The contrivance derrick has its name from Derrick, a hangman employed at Tyburn, London, at the beginning of the 17th century. Davenport, a writing desk, is from the surname. A derringer, short-barrelled pistol, is so called from the inventor, an American. It is said that the term doily is from the name of the first maker, Mr. Doily or Doyly. The Italian, Prof. Galvani, the first investigator in this field, is responsible for galvanism and allied words. Gerrymander is a combination of salamander and the name of a former governor of Massachusetts, Gerry, during whose term of office the practice originated. The guillotine was named from Dr. Guillotin, who, in 1789 favored a more humane method in place of the slow mode of execution then in use. A coachman owes his epithet jarvey, jarvy (also name of a coach) to the surname Jarvie, Jarvis. The electrical unit, joule, is named after Joule, the English physicist. A latrobe, short for Latrobe stove, is named from the inventor, J. H. B. Latrobe of Baltimore. The antiseptic, listerine, is so called for Sir Joseph Lister, the founder of antiseptic surgery. The former name of the guillotine, louisette, is from Dr. Louis, the inventor of the machine. The term macadam, with its derivatives, short for MacAdam pavement, etc., is named for the Scotch engineer who invented it. The name of the garment, mackintosh, is likewise that of the inventor, Chas. Mackintosh. A maverick has its name from Samuel Maverick, a Texan cattle raiser, who failed to brand his cattle and therefore claimed all unbranded strays. The inventor of the process, John Mercer, a Lancashire calico-printer, has given us mercerize, etc. The name of a fish, morris, comes from Wm. Morris, who first found it. A certain drink, negus, is so called from its inventor, Colonel Negus. (It seems natural to have a drink named for some "Colonel.") The ohm, an electrical unit, receives its name from Dr. G. S. Ohm,

who propounded the law known by his name. An English metallurgist, Pattinson, is to be held accountable for pattisonize, a metallurgical term. The sandwich is named after John Montagu, fourth Earl of Sandwich, who had them brought him at the gaming table. The name Sandwich goes back to Sandwich, literally "sand-village," a town in Kent. Saxcornet, saxhorn, saxophone, saxotromba, saxtuba and sax-valve all owe the first element to their inventor, Adolphe Sax, a Frenchman. A silhouette is so called from Etienne de Silhouette, whose rigid economy as French minister of finance caused his name to be applied to things cheap. The two-wheeled carriage, stanhope, is so called after a Mr. Stanhope for whom it was originally made. Vandyke, to cut the edge of, as a dress, in points, after the manner of a Vandyke collar, is so called from the Flemish painter, Vandyke. From James Watt, the Scottish engineer and inventor, comes the term watt, an electrical unit.

Owing to the conservatism which a good dictionary must of necessity exhibit, quite a large group of words which have in usage become common nouns, etc., have not yet reached that distinction in the Century. I refer to such words and expressions as "go gallagher," graham, half-nelson, hooligan, loganberry, mother-hubbard, pasteurize, prince-albert and winchester.

JOHN V. CORTELYOU.

Evolution of the College Student.—II.

THE PREPARATION FOR COLLEGE.

PREPARE AT HOME.—As a rule, it seems better when possible to have all the preparatory work done at home. The student who enters college fully prepared for the freshman year has an incentive to keep up with the class and to finish the course. If one is conditioned and must either employ a private tutor or take a regular preparatory course at the college, he is thereby more or less humiliated and is less likely to remain until graduation. A score of preparatory students who were interviewed concerning the matter, showed in nearly every case a disposition to apologize for the fact of their pursuing preparatory studies.

It is not only likely true that the preparatory student is immature both in years and experience and that he ought for that reason to be kept at home for awhile longer, but it is also altogether probable that the same instruction is given at or near home more efficiently and by a better class of teachers. The preparatory department of the average college is poorly equipped for doing first-class work. Too often the teachers themselves are both underpaid and inex-

perienced. A certain critic did not come very far short of the mark when he said that "Here we often find 'preps' of one kind trying to teach 'preps' of another kind, and with very poor results." Moreover, the expense of sending the student away from home is always greater. "By all means," says an able educator, "let the college student take his preparatory course at the town or country high school or the local academy whose business it is to do just this kind of work."

A WISE FATHER.—There is a proverb which says, "A wise son maketh a glad father." There might be written another in effect that a wise father maketh a useful son. It was stated above that there are some students who ought to quit college after one year's trial and to go to work. Such is my belief. The following true account will illustrate what might well be done in a certain class of cases:

Mr. F., a prosperous stockman, sent his son to college. The boy was nineteen and entered the freshman class. However, during the first term's stay no amount of urging on the part of parents and instructors was sufficient to bring the young man to a sense of his need of an education. He was bright enough but was simply not interested in his studies. At the beginning of a new term the father came all the way to college, 300 miles, and investigated the boy's case thoroughly. After a sort of "trial" at which the latter and his instructors were present, the father was lead to inquire, "What is this boy interested in?," and the question was put to the boy himself. "Handling thoroughbred cattle" was the reply given. It was wisely decided to take the young freshman home at once and put him at the work he liked.

NATIVE INTEREST NECESSARY.—Education of a certain predetermined character cannot be forced upon young people. There must be connected with it an aim which the student can at least learn to see and realize from his own point of view. There are scores of college students to-day who are pursuing some course "just because my parents want me to," as one stated. They soon become listed with the dullards, thereby proving a menace to the cause of education. Not a few of these indifferent students belong to the ranks of those who, during their growing years, never learned the meaning of real work. Let all such be taken out of the school room for a year or two and be put to hard tasks until they become more seasoned; after which the practical necessity of a college training will likely be more fully realized.

It is not improbable that the young freshman described above

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Freshman.		AGRICULTURE.		DOMESTIC SCIENCE.		GENERAL SCIENCE.		ENGINEERING.		VETERINARY.	
T	1 Physics.....	Physics.....	C 62	Geometry II.....	A 63	Adv. Composition.....	A 62	Woodwork I.....	S 26	Woodwork I.....	S 26
	2 Rhetoric I.....	Woodwork II.....	A 36	Physics.....	C 62	Geometry I.....	C 13	Adv. Composition.....	A 32	Adv. Composition.....	A 32
	3 Algebra IV.....	Rhetoric I.....	C 63	Woodwork II.....	S 26	Agriculture.....	G 61	Geometry I.....	A 26	Geometry I.....	A 26
	4 Physics.....	Geometry II.....	C 62	Sewing II.....	S 26	Rhetoric I.....	A 36	Woodwork I.....	S 26	Botany II.....	F 53
	5-6 Blacksmithing I, 4, T & T El. Projection, 2 W; A 76 Phys. Laboratory, 2, F; C 39	Blacksmithing I, 4, W & F El. Projection, 2, Tu.....A 76 Phys. Lab., 2, Th.....C 39	H 26	Rhetoric I.....	A 36	Sewing I.....	C 39	Sewing I.....	S 26	Geom. Drawing, 2, Th.....A 76 Field Work, 2.....	F 53
Sophomore.		AGRICULTURE.		DOMESTIC SCIENCE.		GENERAL SCIENCE.		ENGINEERING.		VETERINARY.	
S	1 Chemistry III, 10.....	German III.....	F 59	Physiology.....	F 60	Analytical Geometry.....	A 72	Chemistry III, 10.....	A 72	Chemistry III, 10.....	C 26
	2 Chemistry III, 10.....	Physiology.....	F 60	German III.....	A 62	Analytical Geometry.....	A 72	Chemistry III, 10.....	C 26	Chemistry III, 10.....	C 26
	3 Entomology.....	Chemistry III, 10.....	C 27	Chemistry III, 10.....	C 27	German III.....	F 59	Comp. Physiology.....	F 60	Comp. Physiology.....	F 60
	4 Horticulture.....	H 26	Chemistry III, 10.....	C 27	Chemistry III, 10.....	C 27	Chem. V, 2½ (1)-(2) Pub. Spkgs. II, 2½ (2)-(1)	C 26	Bacteriology, 2½ (2) Mat. Med. III, 2½ (1).....F 60	Bacteriology, 2½ (2) Mat. Med. III, 2½ (1).....V 52	
	5-6 Hort. Laboratory, 4, T & T Ent. Laboratory, 2, W.....	Pub. Spkgs. II, 2½ (1)-(2) A 51 Physiology Lab., 2, W-Th.....	H 26	Pub. Spkgs. II, 2½ (1)-(2) A 51 Ph. Lab., 2, W-Th.....Alt.....	H 26	Ch. V. Lab. 4, T & T-W & F Pattern Mfg. 2, W-F, T-T Mech. Draw. I, 2, F-W, T-T Shop Lecture II, 1, S.....	A 51	Ch. V. Lab. 4, T & T-W & F Pattern Mfg. 2, W-F, T-T Mech. Draw. I, 2, F-W, T-T Shop Lecture II, 1, S.....	A 51	Anatomy II, 2½, T & T, V 52 Bact. Laboratory, 4, W & F	V 52
Junior.		AGRICULTURE.		DOMESTIC SCIENCE.		GENERAL SCIENCE.		ENGINEERING.		VETERINARY.	
J	1 Stock Feed, 3, T, T & F Ag. Chem., 2, W & F; C 26	Home Nursing, 2½ (1).....K 32 Home Decor., 2½ (2).....K 32	K 32	American History.....	F 56	Shop Lecture IV, 1.....	A 60	Electricity.....	C 60	Electricity.....	C 60
	2 Farm Mec. & Mgt.....G 35	Zoology.....	F 28	Rhetoric II.....	A 60			Civics.....	F 56	Civics.....	F 56
	3 Veg. Gardening.....H 26	Civics.....	C 62	Civics.....	F 56			Rhetoric II.....	A 60	Rhetoric II.....	A 60
	4 American History.....F 56	Physics IV.....	F 56	Def. Integ., 2½ (2).....F 59	A 72			Diff. Equa., 2½ (1).....A 72	S 52	Diff. Equa., 2½ (1).....A 72	S 52
	5-6	German VI, 2½ (2).....F 56 Bacteriology, 2½ (1).....F 60	German VI, 2½ (1).....F 59	Valve Gears, 2½ (1).....S 52	Mech. Draw. IV, 4, T & T Mach. Shop III, 4, W & F.....			Mech. Draw. IV, 4, T & T Mach. Shop III, 4, W & F.....		Mech. Draw. IV, 4, T & T Mach. Shop III, 4, W & F.....	
Senior.		AGRICULTURE.		DOMESTIC SCIENCE.		GENERAL SCIENCE.		ENGINEERING.		VETERINARY.	
S	1 English Literature.....A 60	Economics.....	A 51	Psychology.....	A 33	Thermodynamics II.....S 52					
	2 Elective.....	Elective.....		Elective.....		Ap. Mech. II, 2½ (1).....S 52 Hydraulics, 2½ (2).....S 52					
	3 Animal Breeding.....G 54	Therap. Cookery, 6 (1)-(2).....		Therap. Cookery, 6 (1)-(2).....		Power Station, 2½ (1).....C 60					
	4	Therap. Cookery, 6 (1)-(2).....		Therap. Cookery, 6 (1)-(2).....		Mech. Draw. VII, 4, W & F.....					
	5-6		English Literature II.....A 60		Mech. Draw. VII, 4, W & F.....					
						Dynamo Design, 4, C 60					
						Engineering Lab. III, Tu.....A 72 & C 60					

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Freshman.	1	Cooking (1)-(2), Sewing III.....	C 13	Geometry I.....	C 13	Classics.....	A 32	Botany II.....	F 53	Medieval History.....	A 46
	2	Cooking (1)-(2), Sewing III.....	F 53	Botany II.....	A 26	Composition.....	D 31	Botany I.....	K 32		
	3	Adv. Composition.....	A 62	Algebra III.....	F 53	Algebra III.....	A 63	Composition.....	A 32		
	4	Geometry I.....	A 26	Classics.....	A 32	Medieval History.....	A 46	Algebra III.....	C 63		
	5=6	Geom. Drawing, 2, F....A 76 Field Work, 2.....	Obj. Drawing, 2, Tu....A 80 Field Work, 2.....	Obj. Drawing, 2, Th....A 80 Field Work, 2.....	W A 80	Freehand Drawing, W, A 80		Freehand Drawing, F, A 80			

Sophomore.	1	Chemistry II.....	C 27	Algebra III.....	A 26	Readings.....	A 36	Physical Geography II..	G 52		
	2	German II.....	F 59	Ancient History.....	A 63	Algebra III.....	C 63	Readings.....	G 54		
	3	Chemistry IV, 2½ (1)....C 26	Trigonometry.....	A 72	Botany I.....	K 32	Ancient History.....	A 46	Algebra II.....	C 13	
	4	German II.....	A 62	Trigonometry.....		Composition.....	W 33	Physical Geography II..	G 52	Algebra II.....	C 13
	5=6	Chem. IV Lab., 4, T & T..... Chem. II Lab., 2, W-F..... Projection, 2.....	Dressmaking, 6..... Blacksmithing II, 2..... Shop Lecture I, 1, F.....								

Junior.	1	Art. Lecture III, 1.....	V 52	Algebra II.....	C 63	Bookkeeping.....	A 71				
	2	Rhetoric II.....	A 60	Medicine III.....	V 52	Phys. Geography II.....	G 52	Algebra I.....	A 71		
	3	Civics.....	F 56	Surgery III.....	V 52	Readings.....	A 33	Phys. Geography I.....	G 52		
	4	Def. Integ., 2½ (2).....	A 72	American History.....	F 56	Bookkeeping.....	A 71	Advanced Grammar.....	A 33		
	5=6	Home Architecture, 2½ (1)..... Arch. Draw. III, 4, T & T..... Modeling, 4, W & F.....	V 55	Pharmaceutical Lab.....							

Senior.	1	Roofs and Trusses.....	A 57	Grammar A.....	W 33	Arithmetic B.....	G 53				
	2	Specifications, 2½ (1), A 57 Est. and Contr., 2½ (2), A 57		U. S. History A.....	G 53	Grammar B.....	W 33				
	3	Arch. Comp. III, 6.....A 56		Arithmetic A.....	A 71	U. S. History B.....	G 53				
	4			El. Physiology.....	F 28	Geography.....	G 53				
	5=6										

- (1) Every other day beginning March 27.
 (2) Every other day beginning March 28.

will be back in college two years hence studying diligently and paying his own expenses. The father of six grown sons and daughters once said to the writer of these lines: "My boys and girls are all studious. They were taught from the beginning not to be afraid of hard work and were given plenty of it to do. Now they regard studying as a sort of recreation as well as a means of preparing for independent living." This man knew much of the secret of preparing young people for college.

CHOOSING A COLLEGE.—So far we have merely made the point that the average young person ought to go away from home to college, at least for a while. The choice of a college is important. Too many parents send their sons and daughters to a certain kind of institution for merely theoretic or sentimental reasons, such as the following: This boy has an uncle in Philadelphia to whom he bears a close resemblance. The uncle has made a great success as a civil engineer; therefore the boy must be sent to a school of engineering. The analogy is weak. The boy's natural capacities and peculiarities ought to be considered seriously and the choice of a school made in accordance therewith. Otherwise a serious blunder may be made.

A young man, R. A. aged 18, lived in a small New England town. For years he had shown a decidedly mechanical turn of mind and gave promise of high achievement in that kind of pursuit. But the father, being himself a cabinet-maker, wanted his son to prepare for something higher, and he persuaded the latter against his will to enter a classical college where there was no work-shop. After two years of dreary, tedious blundering the boy quit in disgust, and also gave up his original, cherished hope of obtaining a technological education. Many similar cases could be cited as a warning against forcing a boy to take up a course of study toward which he has not at least some natural inclination.

THE SMALL vs. THE LARGE COLLEGE.—And now comes a possible parting of the ways. There is a vast difference in size between the largest and the smallest colleges. In the latter class is often found a small group of 100 to 200 students and instructors working together in a rather familiar, informal way. In the large college it is not unusual to find several thousand students representing nearly every degree and station of social life.

We might say that the small college turns out graduates "made by hand," while those turned out by the large one are "machine made." In the former there is a close intimacy and sympathy among the whole college group. Student and instructor enjoy such familiar terms of acquaintanceship that the former is likely to

be much influenced by the latter. Such a relationship is, in my judgment, just what the younger student needs—a familiar, respected, personal advisor and friend in an older head to whom he may go with his life problems. The moral and religious influences exerted over all students are also more deeply felt here. Many of the greatest men this country has ever known have received their first inspiration while students in such small but mighty colleges as Bowdoin, Dartmouth and Williams. Webster, Longfellow and Garfield are notable examples.

It has been my observation that during the first months at college the average young student, perhaps for the first time away from home, passes through a stage of extreme impressionability. During this sensitive period he needs some big-hearted, affectionate, scholarly soul to inspire him and rekindle his whole being into a glow of enthusiasm for scientific knowledge and moral rectitude. The impress of such a great soul is everlasting. What delightful memories, under such circumstances, there are in store for the student. As he moves on toward mature years and middle life, this respect for the old-time professor grows more reverential. In my attendance at four universities—two large and two small ones—I have observed many degrees of intimacy between student and instructor. One of my most disheartening experiences of this nature was that of spending a whole term in the class room of a professor who would lecture abstractly for an hour every day, then seize hat and bicycle and break away as if he feared some student might pursue him and make his acquaintance or ask him a question. In striking contrast with this case there might be mentioned that of the eminent Professor Royce, of Harvard, who is inclined to remain in the class room long after the period of dismissal in order to reply to the questionings of his students.

But the small college has also its disadvantages. Usually, the endowment is small, and the equipment, especially for scientific work, rather meagre. Such institutions have heretofore done their most effective work in the so-called classical course; the languages, literature, history, mathematics, and "mental and moral" philosophy were the great subjects taught. The large college has usually, on the side of advantage, a large endowment, a good library, an extensive equipment for research work, and a more cosmopolitan society, but on account of the greatness of its numbers, the classes are often over-crowded, the close personal contact between student and instructor is lacking. There is also more tendency toward manifestations of the mob spirit and a more general feeling of freedom from restraint and responsibility.

CONCLUSION.—After considering the matter seriously during several years of attendance at both of these classes of colleges, I have come to the conclusion that the ideal arrangement is for the student to attend the smaller institution for one or more years until he develops a good set of college habits, and then to go to the larger one to finish his course. The precise length of this "seas-on" period will depend on the nature of the student and the nature of the work or vocation he is preparing to take up. In some instances, the full four years in the small college and then a period of graduate work in a great university would be advisable.

W.M. A. MCKEEVER.

(To be Continued.)

Local Notes.

The heavy snow of Monday stopped all building operations on the new Granary and the new Horticultural Hall last week.

Miss Gertrude Hilliard, who played the accompaniments of the Choral Union concert, is a very creditable addition to the Music Department. Professor Valley says that she is always in her place and always does her part well.

The College Band, under Conductor R. H. Brown, gave an afternoon concert in the Auditorium on Thursday, March 8. About eight hundred seats were occupied and the program, consisting of six selections, was greatly enjoyed. The band consists of thirty-four pieces and is in fine trim.

Miss Karin Linskog, the violinist from Chicago, who so ably assisted in the Choral Union concert last Thursday night, proved to be a fine artist on the violin. Her Dudziarz number was masterfully rendered. The body of tone was full of fire and feeling and her appearance on the stage was pleasing.

The second annual concert of the College Choral Union, under the direction of Professor Valley, was given to a full house last Thursday night in the Auditorium. The program consisted of an overture by the orchestra, three grand choruses by the Choral Union, a fine violin solo by Karin Linskog, a bass solo by E. C. Farrar, a piano rhapsody by Assistant Cecilia Augspurger, a song by the Glee Club, and a series of selections from Gounod's Faust. The latter were introduced by explanatory remarks on Faust, by Professor Kammeyer, a feature which added greatly to the interest of the audience in the selections. The concert was a grand success. The 150 members of the Choral Union, the 21 members of the Glee Club, and the 35 members of the orchestra, all seated on the platform or in the orchestra pit, presented a fine view, indeed, and their singing showed careful training and individual effort. Every piece was well rendered, the solos as well as the choruses, and we congratulate Professor Valley and his able assistants on the evident results.

Recognizing the importance of interesting young men in the study and improvement of the various breeds of domestic animals, the Agricultural Association, in connection with the Animal Husbandry Department, held their annual stock-judging contest on March 5. The contest was open to all agricultural students, and great interest was taken. Gold medals, valued at five to twenty dollars, were given as prizes to the ten men having the highest averages. The merchants and business men of Manhattan donated very liberally to the fund for the purchase of the medals. Each contestant was required to pass judgment and write reasons on two classes of horses, cattle, sheep, and swine, and the results of the contest are as follows: the highest possible score was 600 points, and W. J. Brown was first with a score of 563; J. S. Montgomery, second, 488; A. J. Milham, third, 479; T. T. Baker, fourth, 473; C. F. Blake, fifth, 472; M. D. Snodgrass, sixth, 470; Harry Oman, seventh, 466; H. W. Hull, eighth, 465; Clarence Lambert, ninth, 457; W. T. McCall, tenth, 448.

Alumni and Former Students.

Dr. J. D. Riddell, '93, with Mrs. Riddell, of Enterprise, Kan., were the guests of Mr. and Mrs. R. J. Brock, both of '91, this week and attended the concert.

Miss Daisy Day, '95, of Onaga, is visiting her sister, Mrs. Flora (Day) Barnett, and other friends in town.

F. W. Wilson, '05, animal husbandman of the Arizona Experiment Station, having been in Kansas City on business, stopped off to visit the College and attend the concert.

Among others seen visiting College and attending the concert were: A. H. Sanderson, '03, of Marysville; Hattie Forsythe, '04, of Dwight; and G. H. Wilson, '05, of Winfield.

Mrs. Sadie (Stingley) Haggman, '96, with her little daughter, has arrived from Los Angeles, Cal., for an extended visit with friends and relatives in Manhattan, Kackley, and Kansas City.

A. N. H. Beeman, '05, is located at Kansas City, Mo., as associate editor of the *Missouri and Kansas Farmer*. His address is 410 Hall Building, where he has a good opportunity and excellent prospects for the future.

C. A. Scott, '01, in charge of the forest plantations of the United States Forest Reserve, Halsey, Neb., visited the College this week. He came in a day or two earlier in order to attend the concert. He was on his way to Garden City, Kan., where he will start a nursery plantation on the large Government reserve on the sand-hills southwest of that place. The course of eighteen lectures which he gave at the University of Nebraska was so satisfactory that the university authorities have requested the Bureau of Forestry to permit him to deliver them annually, and this has been allowed. Mr. Scott has also given a month to farmers' institute work in Nebraska. He reports a great interest in the importance of forestry.

THE WASHINGTON ALUMNI ASSOCIATION.

We have received the following report of the recent reunion at Washington.

The fifth annual reunion of the Washington Branch of the Kansas State Agricultural College Alumni Association was held Friday evening, March 2, at the Teacup Inn, 1627 H street.

After a few minutes spent in friendly greeting, a guessing contest was introduced by Prof. C. F. Doane. Pictures and "catch expressions" from well-known advertisements had been placed conveniently about the rooms and each person was requested to write, on the cards provided them, a list of the articles to which these advertisements refer. All contestants were placed on their honor save the four former professors, who were closely watched to prevent collusion. Mrs. D. E. Lantz won first prize, a box of Lowney's chocolates, while the booby prize, a package of Gold Dust, went to C. P. Hartley.

Light refreshments were served at 9:30, after which Mrs. R. S. Kellogg favored us with a piano solo.

The literary portion of the program consisted of an illustrated edition of the "K. S. A. C. Tidbits," presented by its editor, R. S. Kellogg. The editorial staff consisted of: Editor-in-chief, R. S. Kellogg; postman, W. R. Spilman; wood-chopper, W. L. Hall; bug hunter, A. B. Gahan; milkmaid, E. H. Webster; globe trotter, D. G. Fairchild, advertising manager, A. S. Hitchcock; macaroni dispenser, L. A. Fitz; coyote exterminator, D. E. Lantz; sporting editor, R. A. Oakley; oldest inhabitant, G. H. Faillyer; political economist, Thos. E. Will; correspondent, O. E. Olin; artist, J. B. S. Norton; principal devil, C. F. Doane.

Realistic scenes from College life and a colored sketch of Anderson Hall adorned the cover pages. Some spicy articles on burlesque sessions of the College literary societies and College football games, together with news notes and bits of humor, enlivened it throughout. Fitzcarl wheat, propagated by Messrs. Carleton and Fitz, was shown to be merely an importation of the variety upon which Methusaleh thrived. "The worth of a liberal education," "K. S. A. C. in 1873," and "K. S. A. C. as it is at present," were among the best articles. The paper also contained a memorial to the late president of the association, Geo. F. Thompson.

The following is a list of those who were present: Mr. and Mrs. L. W. Call, Mr. and Mrs. M. A. Carleton, Mr. and Mrs. C. P. Hartley, Mr. and Mrs. C. F. Doane, Mr. and Mrs. W. L. Hall, Mr. and Mrs. L. A. Fitz, Mr. and Mrs. R. S. Kellogg, Mr. and Mrs. J. M. Westgate, Prof. and Mrs. A. S. Hitchcock, Prof. and Mrs. D. E. Lantz, Miss Margaret Butterfield, Prof. G. H. Faillyer, Prof. J. B. S. Norton, Prof. Thos. E. Will, Major J. F. Morrison, E. C. Butterfield, R. A. Oakley, Nicholas Schmitz, Harry Umberger, A. B. Gahan, Earl Wheeler, W. R. Ballard.

The Library received a box of 120 volumes of bound magazines from the State bindery this week.

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Vol. 32

No. 25

ISSUED WEEKLY Historical Society

Kansas State Agricultural College

Manhattan



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Seed Breeding From the Business Standpoint.

IT MAY be news to Kansas readers to learn that the greatest seed breeding establishment in the world is located in Sweden. In the small village of Svalöf, in the Swedish province of Schonen, near Malmö, and in the neighborhood of the southwestern Swedish coast, opposite Copenhagen, is the seat of the "Sveriges Utsädesförening" (Swedish Seed Society). This is a private corporation, organized in 1886 under the name of the "South Swedish Society for the Breeding and Improvement of Seed," organized by landholders of the province, for the primary purpose of securing better seed for their locality. The rapid extension of the work and influence of the organization, and its absorption of smaller concerns in other parts of Sweden, led to the assumption of the new name in 1894, and to the organization in 1891 of a branch corporation named the "Allmänna Svenska Utsädesaktiebolaget" (General Swedish Seed Distribution Company). This subsidiary corporation, which is under the control of the original company, has exclusive charge of increasing and marketing the varieties originated by the seed breeding establishment. It is, however, with the activities of the latter that the plant breeders are most interested.

Some conception of the extent of the seed-breeding operations at Svalöf may be gained from the statement that in the year 1900 (figures for a later date are not at hand) 2600 field plats were cultivated, including varieties of wheat, barley, oats, peas, vetches, beans and corn. Of these, 138 were comparative tests of varieties practically ready for distribution, of which twelve, only, were old sorts grown simply for the sake of comparison, while the remaining 126 were entirely new varieties, discovered and isolated at Svalöf. In the year above named, 431 new sorts were added to the pedigree books from a series of new stock plants experimented with during the preceding summer. Of course, by no means all of these will be sold and distributed, but only the few that finally survive the rigid test to which they are subjected. For example, in 1901, 18

new sorts of plants were announced as having passed the final test for that year. Five of these were wheat and six were barley sorts, with three of oats and four new varieties of vetch, each of which appears as a named variety.

What is the secret of the success of the Svalöf Station, in the production of new varieties of economic plants—a success absolutely unattained and unheard of in any other station elsewhere in the world?

One may answer that it is due, chiefly of course, to the method followed, and perhaps equally to the very vital fact of the division of labor in the matter of plant breeding. The Svalöf station is strictly a commercial concern. Its aims are definitely practical. Its varieties are produced to sell, and not, primarily, for any scientific interest attaching to their production. And yet so intimately does commercial success depend upon the right scientific method in originating varieties, or rather, let us say, in discovering them, that the utmost scientific acumen is demanded and put in force in this search for new forms, and the utmost possible use is made of the advantages due to right organization and proper subdivision of the work. Beside the director, Dr. Nilsson, there are several assistants, each one of whom spends his entire time, year after year, in the study and investigation of a single crop plant from every possible point of view, and always, let it be emphasized, keeping the practical issue in mind. Results, therefore, that would be inconceivable and unattainable under the present organization of most of our American experiment stations, are perfectly possible under the highly specialized system of Svalöf.

But let us go back to the question of the method, which is, after all, the matter of main importance. It must be remembered that at the outset the Svalöf station began, in 1886, with no further knowledge of the methods of breeding than existed at the time generally in Europe, and with no different theories. The conception at that time was, that to improve, let us say, a "variety" of wheat, the best seeds from the best heads of the best plants should be saved each year and planted, the variety, so called, being regarded as a unit. Now, as a matter of fact, wherever this method has been followed, it has yielded very meager results, utterly incommensurate with the labor and outlay employed. It seemed always impossible to obtain a pure race in this manner or to fix new characters. Now this method of what may be called "mass selection" was followed at Svalöf up to 1891, when the new director, Dr. H. Hjalmar Nilsson, took charge of the work. It was felt that up to that time the station's efforts at plant improvement

had practically ended in failure, and a new method had to be sought out. Dr. Nilsson, after a short trial of the already existing method, conceived the idea of adopting the "pedigree culture method." This method, instead of contemplating a so-called variety as a unit, disregarded all named varieties, and assumed the single plant itself as the unit. Search was made through the fields for individual plants showing the desired characters. Each one of these plants was given a number and the seed, saved separately, was separately planted, and these separate or "pedigree cultures," each derived from a single instead of from a mass of individuals, showed in pure form the exact characters of the selected parents, except in those occasional cases of the unconscious selection of natural hybrids, where the splitting up of the progeny made the "pedigree culture" a mixture of types. In the summer of 1892, the investigators of the station were therefore set at work on all the grain fields of the institution, selecting and preserving separately, individual plants having characters desired from the practical standpoint. In this way about 2000 individual mother plants were isolated, and in the harvest of 1893 the absolute uniformity of the overwhelming majority of the separate cultures within themselves was very striking to those who had been accustomed to find an ever recurring variability. For example, out of 422 mother oat plants, selected in 1892, 397 gave, in 1893, uniform cultures, only 25 being variable. This experience determined once for all the lines along which selective breeding must proceed.

It is not at all a distinctively new method, having been followed previously by the English breeder, Le Couteur, of the Island of Jersey, and by the celebrated Scottish breeder, Patrick Schirriff. For some reason, however, the principle seems to have made no material progress since Schirriff's work in 1856, and the special virtue of it seems not to have become very apparent in the minds of breeders and agriculturists generally. The whole trouble, all along, has been the conception from which our agricultural public finds it so difficult to escape, that the named varieties of plants sold by seedsmen are really units, whereas, as a matter of fact, they are nothing but mixtures of many different sorts, which may, however, look so much alike to the unpractised and untrained eye, as to allow the variety to pass for a single simple and uniform type. Now it has been the special virtue of the work of the Svalöf investigators that, by scrutinizing, with the utmost minuteness, the lesser, almost insignificant appearing structural characters of plants belonging supposedly to the same variety, they have been able to find small differences in structure

and form which go hand in hand with and act as clues to the existence of certain very important characteristics from the economic standpoint. To illustrate: It was observed that a certain definite correlation obtained between the quality of the grain in barley and the presence of hairs on the bristles of outer chaff; long, straight hairs being coupled with the presence of coarse grains, while short, curled hairs were correlated with the presence of finer grains suitable for brewing purposes; and it was further found that the barleys with stiff straws belonged to the former type, while those with weaker straw, subject to lodging, belonged to the latter type; and for this reason the otherwise highly desirable Chevalier barley, so famous throughout Europe as a brewing grain, could not successfully be grown in southern Sweden, the barley type there prevailing being the stiff-strawed but coarse, Imperial barley of inferior brewing quality. With the minute and apparently insignificant clue of the correlation of the type of hairs referred to—a microscopic character—with the presence of a grain of fine quality, an organized search was commenced in 1892 through the fields of Imperial barley at the station, to find individuals with short, curled hairs on the outer bristles. The number of individual plants, gathered separately for investigation, ran into the tens of thousands. Almost all had the long hairs referred to as going with the inferior coarse grain, but a few were also found with short, curled hairs upon the bristles. These were isolated by individuals, and by the next year it turned out that for the 30 cultures the desired correlations held good of short, curled hairs and fine growing grains, in barleys of the stiff-strawed, Imperial type. The best of these was finally put out by the station under the name of "Primus" barley, which does not at all belong to the Chevalier group but to the Imperial group of barleys, with the stiff straw of the latter, but with the fine, smooth, yellow grain of the Chevalier type, and with the further desirable characters of early ripening and prolific yielding. Now, it is plain enough that nothing new "originated" here. This "Primus" barley, isolated after several years of painstaking research, had already been present from the beginning in ranks of the variety sold by the trade as Imperial barley, but always in small numbers of individuals and totally obscured by the more prominent form bearing coarser, poorer grains. Looked at in the field and selected by the ordinary methods of inspection, this type would never have been isolated. Sharper and more exhaustive investigation revealed its presence; then it was simply a matter of isolating it in a pure culture and

growing enough of it to put on the market, which was accomplished by 1901.

This simply shows what is a universal fact, that practically every so-called "variety" of seed on the market is a mixture of forms, the gross characters of which may be so much alike as to cause one to overlook the presence of small differences which may be coupled with important economic facts. To observe these small differences requires the work of expert specialists, each one of whom devotes his time and his whole time to one or two crops. One cannot, as in American experiment stations—figure as a breeder of all the cereals and half a dozen other economic plants—have in charge several other and totally different lines of economic work with plants, such as crop production, rotation of crops, and tillage; or the investigation of plant diseases, seed control work, etc., etc., beside conducting several classes daily, and participating in the usual side issues of a teaching institution, and expect to become eminently successful and make rapid strides in the breeding and improvement of important crop plants. And yet this is about the situation in American agricultural colleges and experiment stations. There is a great hue and cry for the improvement of crops, and sometimes it is difficult to tell on which side the noise is the greater—on the side of the public demanding improved varieties, or on the side of the breeder acclaiming in a loud voice for advertising purposes that he has got them. A critical scrutiny of the work of our experiment stations reveals the fact that there is almost utter lack of uniformity in method, that premature results are continually being published, and that the alleged facts of progress will stand considerable discounting. In other words, the fact simply is this: That our experiment station breeders of plants are everything else almost all of the time, and breeders of plants occasionally and between times. We are like Carlyle's "Professor of Things in General," expected to be specialists in everything; and what time is left from teaching and administrative duties, instead of being devoted, at each station, to the study and improvement of some one single crop, is bestowed with equal liberality or impartiality upon a dozen species. Whether regarded from the scientific or business standpoint, the situation is an absurdity.

The success of the Svalöf station is distinctly ascribable to the fact that at Svalöf the men do nothing but investigate, and each man on the staff investigates his own crop. Nobody does any teaching. There are no students asked or permitted. There is not even the last improved adjunct of the American college system—the summer school. Now it ought to be understood, with-

out any qualification, that the Svalöf station is a business proposition, pure and simple, and presents the heartening aspect of actual scientific investigation conducted on purely business principles, and resulting in the marked success which one would naturally expect; a glowing contrast to what we are able to show by way of plant breeding in America. It should be remembered, furthermore, that because Svalöf is a scientific station with distinctly practical aims, no time is wasted on new forms which do not serve practical ends. The isolated type must actually turn out to be better for this or that locality over Sweden, or it is swept into the void. Nevertheless, despite the distinctly practical and economic aims of the institution, and perhaps precisely because of them, only the best scientific methods are employed. Pure science always underlies all real progress in applied science, because no investigator is worth anything or gets anywhere who has not a theory or an underlying hypothesis of a purely scientific nature to guide and direct his work. So-called "practical work" otherwise degenerates into the blind and purposeless idling of a child over his playthings.

It is perhaps an illuminating fact, in connection with all that has been said, that because of all the complications entering in at the American experiment stations, the greatest practical progress in plant breeding and plant improvement in America has, with rare and conspicuous exceptions, not been accomplished at the experiment stations at all, but by private individuals or corporations. Let Burbank, Munson, the Kelloggs, Funk Bros. and others serve to illustrate.

Space is not here to speak more fully of the methods at the Svalöf station, of the remarkable machinery invented for particular purposes, of the system of book-keeping, etc. This may be presented in some future paper. It is sufficient to close with the statement that the success of the institution and the value of its work are attested by the fact that from a private corporation supported entirely by individual means, Svalöf has grown to have a quasi-public aspect, receiving an annual appropriation of 15,000 kroner from both the Royal Parliament of Sweden and the Swedish Agricultural Society.

Americans usually pride themselves upon enterprise and business sagacity. The progress of agriculture in America is the greatest and most important undertaking of the American people. When shall we awaken to the fact that progress in agriculture depends chiefly upon the breeding of plants for each agricultural region, and that the more rapidly this is done, the more prosperous

the country will become. But in order to achieve any progress in this work of breeding, in order to arrive anywhere within a reasonable time, the breeding of each principal crop will have to be submitted to a specialist who shall devote his whole time and energy to it alone. One does not have to go to Sweden to find examples of the proper application of this method to commercial lines. The study of the organization of great American business and banking houses shows how commercial success and financial reward follow a division of labor and the training of business experts in special lines. Let a tithe of the capital and intelligence now devoted to mercantile concerns be diverted into a business-like and, if you please, commercial promotion of plant breeding and animal breeding, and the increase of American wealth and prosperity in one generation will be something inconceivable to the minds of those now living, and will be the more beneficent because of its wide distribution.

H. F. ROBERTS.

Home Decoration in Japan.

FOR an example of the artistic in Japanese homes, we should consider principally the homes of the people rather than of royalty or the higher classes. It is easy for any favored class to have artistic surroundings; for if they have not the taste themselves, it is easy to command the services of those who have; but when the common people show refinement of taste it must be inherent.

To appreciate the artistic tastes of the Japanese, we must first divest our minds of most of our western ideals, and bring them into sympathy with the simplicity and reserve exhibited in their decorations. There is a delicate refinement of taste in Japanese decoration, whether it be on colossal figures or on the simplest vase; and their homes are marked by the utmost simplicity and cleanliness—what seems to us to be actual bareness—but their taste is evident in the simplest arrangements. To them our crowded rooms, and walls covered with pictures and bric-a-brac, must seem stuffy and devoid of taste. They use no furniture in our sense of the word, and the principal decorations of a room are on the sliding partitions, the screens, and the woodwork, about the windows, and in the recess at one end of the room where hangs the one picture; and the inevitable vase of flowers is found on a shelf or stand. This vase holds one variety at a time, perhaps a single cherry branch in bloom, but never a conglomerate mass of color.

Even the poorest have this love for flowers to relieve the bareness of their homes. The love of nature is universal; and they

adapt the commonest things to an artistic use. A twisted limb or a piece of sea wreckage may be used to form an arch over an entrance or a post for a gateway.

Every house has a garden at the back, even if it be not more than three feet wide, and this is so arranged as to give as distant a vista as possible. The main rooms open upon this garden so that a little landscape at least can be enjoyed from each house. Every art is employed to give apparent expanse to this garden; and a studied arrangement of every shrub and stone contributes to give a natural and artistic effect. Here or on the veranda the family enjoys its social intercourse and friends are entertained.

The back of the house is at the front. The side on the street has no attractiveness, the only attempt at decoration being sometimes about the gateway. In cities, this side is where the kitchen is located for convenience in dealing with street venders, which is done through a sliding board window. It is only after entering the house and being conducted to the rear that any attractiveness is visible. Here the finishing of the windows and the veranda is ornamented according to the means of the owner, bamboo being much used in a fashion similar to our grill work. It is also used in connection with carved wood and for vases and other receptacles.

So few houses are two stories on account of frequent earthquakes that hall and stairway decoration, so prominent with us, is wanting in Japan. When a house has two stories, the stairs are steep, without rail or attempt at ornament.

The partitions of rooms are sliding so that the whole house can be thrown together, and these afford opportunity for artistic designing. The frames are sometimes lacquered, and paintings by celebrated artists may cover the screens. In common homes they are often covered with paper, but this is made in infinite varieties and artistic designs. Above the partition is often an ornamental open-work panel of carved wood or bamboo, which allows light and air to pass freely from room to room.

The windows are covered with white paper which allows a soft light to enter the room, and if accidentally torn it is mended; not as we might do it, but most artistically with some geometrical or flower design.

The guest room is distinguished by two adjoining recesses on one side; one with shelves and drawers, ornamented as taste and means allow; the other open where the picture hangs and the vase stands. In the construction fancy headed nails of wrought metal may be used, and unusual shaped trunks of trees for posts, while

the floors, shelves and drawers may be of highly polished wood. These recesses are never symmetrical; one has a higher floor or lower ceiling than the other, the ornamentation varies, and the shelves are arranged irregularly to give variety. As this is the chief place for decoration in the room, it will hold any piece of bronze or porcelain, or an incense burner on a lacquered stand.

If the owner has a collection of pictures he changes the one hung in the recess from time to time; and if a friend seems interested he has his collection brought from the Kura, or fire-proof building, and exhibits it. In this fire-proof storehouse are kept all their art treasures because the houses are all of wood, and so inflammable that conflagrations are frequent; and each house of any pretensions whatever has this Kura at a distance where the household effects can be hastily removed.

The lack of ostentation in the Japanese is strongly in contrast with western style, and they must consider some of our modes a vulgarity. Even the lowly exercise a harmony of taste in their arrangements, and if they have room for but one tree it will be so planted as to give the impression of a garden beyond. These artistic sentiments in the poor with their extreme cleanliness rob poverty of much of its squalor and wretchedness.

The Tea Ceremony is of some importance, as it has had a great influence on Japanese art. Special rooms are arranged for it, but they are plainer than the others, the artistic part being in the utensils used and the manner of brewing and serving. The making of tea at a ceremonial tea serving is governed by fixed rules, and books are written on the different schools of tea ceremonies. One writer says the Tea Ceremony has had an effect on the Japanese almost equal to the Calvanistic doctrines on the Puritans. The utensils may be of the finest lacquer or porcelain, or of the simplest pottery, but are always in consonance with the surroundings.

At a dinner the arrangements are more elaborate, and each plate of food strikes ones sense of color, appealing to the eye as well as to the palate. When seated a tiny lacquered table like a footstool is placed before each guest and food is placed on this. Lacquered dishes take the place of silver with us, and some are very elegant, being inlaid with ivory and metal. Knives and forks are not used and the soup is drunk, but there is a dainty nicety in every act.

Their laquer work shows, more than anything else, true elegance and originality. Lacquered articles are largely used in household and personal adornment. A set of lacquered toilet ar-

ticles is frequently a part of a noble lady's dowery; and cabinets, boxes, and trays of exquisite workmanship are the coveted curios of the collector. This art dates from the seventh century and is of purely native origin and development, while bronze is of Chinese importation. Bronzes of rare quality are used as household ornaments as well as in heroic figures, but with a reserve taste as to quantity.

The secret of the Japanese success in every industry has been his infinite patience in detail, for time is not reckoned if he is to embody his ideals. One lesson for America to learn from Japan is carefulness in details and simplicity in taste and living.

In their simple artistic tastes is embodied the principle which makes even poverty tolerable, for they utilize the commonest things with artistic effect. This principle directs even their diversions and amusements. An outing just to see a blooming cherry orchard, or a trip just to get an artistic mountain view is not at all unusual. All this with no expense or show but only to gratify the artistic sense! When do we find Americans, of the working class especially, taking any such fresh inspiration from nature? Truly we may learn some things from artistic little Japan.

INA E. HOLROYD.

Baseball practice has been resumed by the athletically inclined students. About forty men are out trying for the main team which is coached by M. F. Ahearn, who so successfully coached the football team last fall. Ahearn says that he expects to turn out a winning team. The main trouble at present seems to be the lack of an experienced catcher. R. A. Cassell, who was the catcher two years ago, is a senior engineer and has no time to play. Caldwell, Furey and Mallon of last year's team are all working hard, and they will probably do most of the pitching. A number of freshmen are showing up well for this position. Fred Hayes, an old Kansas City Manual player, is doing especially well. Captain Cunningham will be at his old place at short, and Haynes, Cave and Mallon will probably cover the bases. Herb Strong, who led the team in batting last year, will be back in left field, while the other field positions will go to Al. Strong, Davis, or Porter. The spring-term schedule has not yet been completed, but it will comprise about twenty games, including University of Nebraska, University of Kansas, Colorado State College, Washburn, Baker, and the State Normal. Two trips will be made, one in April, and one in May, with possibly a trip into Nebraska in June.

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Local Notes.

The Lulu Tyler Gates Company next Friday, March 23.

The assignment committee is busy making assignments for spring term.

Ex-regent Hunter, of Blue Rapids, was a visitor at College last Thursday morning.

Professor Hamilton, who was badly hurt three weeks ago by a fall from a step-ladder in his laboratory, was at his post again this week.

In spite of the bad weather this week, the attendance of the students was quite regular and prompt every day, and there were few cases of sickness or tardiness.

The basket-ball team, with Coach Melick as chaperon, left Thursday for Emporia, where they played the State Normal, going to Topeka Friday to play Washburn.

A number of high-school pupils of Wamego were here last week to arrange for taking courses at the College. Principal A. J. Beatty, of the Wamego schools, was with them.

The domestic science short-course girls gave a reception to their friends on Saturday evening, from 8 to 10 o'clock. This being St. Patrick's day, the invitations were written in the Irish vernacular on green paper.

At a recent meeting of the stockholders of the *Students' Herald*, C. E. Whipple, '07, was elected editor-in-chief; James Brock, subscription manager; May Griffing, literary editor. The rest of the staff were reelected.

The College Glee Club, accompanied by Professor Valley, Miss Lindskog, Miss Gertrude Hilliard, and Miss Gertrude Eakin, went to Wakefield last Monday to give a concert. They report a good time and a fair audience.

Winter term closes March 23. The term examinations will be held Thursday and Friday, ending at 12 o'clock Friday noon. Spring term will begin Tuesday, March 27. The examinations for admission will be held Monday, March 26. Commencement this year will be on June 14.

The Westinghouse Electric Manufacturing Company has written to Professor Eyer for four electrical engineers from this year's graduating class. The first western men this company has employed are R. A. Carle and R. A. Fulton, of last year's class. Evidently the company was not disappointed in the engineers sent out from the course here.—*Students' Herald*.

Fairbanks, Morse & Co. have sent to the Electrical Engineering Department two gasoline engine electric generator outfits to be tested for their adaptability and efficiency for small electric-light plants. Several of the senior engineers will work out their theses on this subject.—*Students' Herald*.

D. C. Sullivan, senior in the agricultural course, received word last Wednesday that his father, who is a farmer in Grant county, was seriously hurt by a runaway team, and that he must come home at once to take charge of the farm operations. Sullivan hopes to return next year and graduate with the '07's.

Two games of basket-ball were played Wednesday night in Commercial Club Hall between the freshmen and sophomore teams and the College team and Ahearn's picked team. The College team defeated Ahearn's team by the score of 41 to 29, and the freshmen defeated the sopomores by the score of 17 to 15.

Mr. A. G. Wessling, engineer with the Bullock Electrical Manufacturing Company, of Cincinnati, will visit the Electrical Engineering Department and lecture to the Engineers' Association March 17. He expects to interview members of this year's class with a view to giving them employment with the company.—*Students' Herald*.

The Chemical Department is analyzing a large lot of canned vegetables for the State Board of Health, to determine possible adulterations, preservatives, and coloring matter. A law passed by the last legislature makes it the duty of the professors of Chemistry of the State Agricultural College and the State University to make such analyses at the request of the board.

The College conducted a series of farmers' institutes this week in the northwestern part of the State on the line of the Rock Island railway. The subjects emphasized at all meetings were stock feeding and corn breeding. The itinerary was as follows: Wayne, Monday, March 5; Belleville, Tuesday, March 6; For moso, Wednesday, March, 7; Smith Center, Thursday, March 8; Norton, Friday and Saturday, March 9 and 10; Oberlin, Monday, March 12; Phillipsburg, Tuesday, March 13; Clay Center, Thursday, March 15. The College delegation consisted of Mr. Wheeler and Institute Secretary Miller.

Manhattan has done much for its streets and sidewalks the last three years, but it should do more. The past week has demonstrated that nearly all the streets in the upper part of the city are poorly drained and that more sidewalks are badly needed. Good sidewalks are not a luxury; they are a necessity in a college town. The city authorities should see that walks are built and repaired, no matter how much a few lot owners may grunt and kick. Manhattan can build its sidewalks cheaper than any city in America. Grading costs but little on its level and sandy town site and clean, sharp river sand—the chief ingredient of the cement sidewalk—can be had in both of our rivers for the effort of loading it directly on the wagon. Let the good work go on.

The *Ohio Farmer*, published at Cleveland, O., contains a five-column article on "The Balanced Ration," by Prof. J. T. Willard of this College. In a preface note the *Farmer* states that the article forms number one of a series on this subject, written by the professor. A half-tone of the author adorns the front page.

The zoölogical museum has lately received valuable specimens from Delphos, Sun City, Glasco and Pratt. This week we received a coyote, five specimens of the very rare cotton rat, and a mink. Our thanks are due especially to the Davidson brothers, of Glasco, and C. S. Marty, of Sun City, for repeated contributions to our collections.

The Zoölogical and Animal Husbandry Departments recently secured thirty Oregon pheasants from the State game warden at Pratt, Kan. The birds are for experimental work, and if the departments are successful in raising them the birds will probably be liberated on the College farm. The State game warden is endeavoring to introduce the pheasants into Kansas and is interesting parties in the raising of them in the hopes of, in time, stocking Kansas woods with the birds.

Assistant T. H. Sheffer, of the Zoölogical Department, has just completed a very fine exhibit of the order of spiders (Arachnidæ) for the zoölogical museum. The exhibit is neatly arranged in a large glass case, and every specimen is labeled with a printed card giving its name and classification. Mr. Sheffer has given much time to the study of this order. He has written several interesting monographs on the subject and his collection of Arachnidæ is one of the very best in America.

John O. Olson, apprentice in the Heat and Power Department in '98, writes to Engineer Lund from Clarinda, Iowa, that he is superintendent of the electric plant at that place, and that he has held his position for three years and has lately rebuilt and removed the entire plant without stopping it for a day. Of the moving of the smoke-stack he writes: "I moved the stack, which is ninety feet high and three feet in diameter, thirty-six feet, raised it seven feet, and placed it on a brick pedestal fifteen feet high without laying it down or stopping its work more than ten hours."

Prof. Ralph R. Price has lately published a very neat booklet of "Questions and References for the Guidance of the Class in Civics at the Kansas State Agricultural College." The pamphlet contains chapters on Civil Government, Colonial Governments, Confederation and The Constitutional Convention, The Constitution, The Legislative Departments, Amendments to the Constitution, Cases on Constitutional Law, Bibliography, etc. The subject-matter is arranged in numbered paragraphs, most of which are stated in the form of questions, the references quoted containing the answers. The book shows that the Professor has given much time to its preparation and it will undoubtedly prove a great help to his students. The typographic work was done by the College Printing Department, and exhibits the good taste of all of Superintendent Rickman's work.

Senior E. J. Evans has lately furnished drawings and specifications for a new cottage to be built on Houston street. Junior H. Spuhler is preparing drawings and specifications for an addition to the Gillett House. Junior H. Brinkman is working on drawings and specifications for a new colonial residence on Houston street, and Junior Porter is planning a basement with a heating plant for the Episcopalian church. All four are students in the architectural course and are doing this practical work in addition to their regular class work. A better quartette of young men would be hard to find. We are proud of them.

Alumni and Former Students.

The address of Earl Wheeler, '05, is Washington Barracks, Washington, D. C.

Henrietta and Christine Hofer, of the class of 1902, may now be reached at 3266 Wabash Avenue, Armour Station, Chicago, Ill.

Myrtie Toothaker, '02, of Blaine, Kan., returned to her home this week, after attending the concert at College and visiting friends in town.

R. F. Bourne, '03, was graduated from the Kansas City Veterinary College last Wednesday evening. J. W. Joss, junior in 1902, is a member of the same class.

Sallie Maud Smith, '04, is primary teacher in the Freedmen's National High School, located five miles from Tahlequah, I. T., and is enjoying her work very much. She reports that two members of this year's graduating class will attend the College next year.

Margaret Haggart, '05, under the auspices of the U and I Club, of Topeka, Kan., is giving some courses of lessons in domestic science. One of these is for the society ladies of the city, another for the children of less favored classes. The club has equipped a laboratory for the work and Miss Haggart is well pleased with her success thus far. She visited the College and attended the concert this week. She has entirely recovered from the breakdown in her health from which she suffered for some months last summer.

The fourth annual meeting of the Kansas City Alumni Association of the Kansas State Agricultural College was held in the Pepper building Friday night. The President of the College, Prof. E. R. Nichols, made the first short talk of the evening. He was followed by the following alumni: C. V. Holsinger, '95, Rosedale; J. R. Harrison, '88, and B. L. Short, '82, Kansas City, Kan.; and Dr. A. T. Kinsley, '99, Kansas City, Mo. The speeches preceded a buffet luncheon. It is the hope of the association to hold more frequent meetings than it has in the past and to have some special feature for each meeting. About eighty graduates and former students were present. B. L. Short, '82, of Kansas City, Kan., was elected president; Miss Bertha Bacheller, '88, vice-president, and Dr. Geo. W. Smith, '93, secretary and treasurer.

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No. 26

The Description of External Nature in Endymion, Book IV.— A Study.

KEATS had the same intense feeling for beauty that Wordsworth had for nature. The first line of his "Endymion"—"A thing of beauty is a joy forever"—is the keynote to his thought. The beautiful, not the ethical, is to him the important principle in poetry. To give joy, to soothe, to ease the heart is his ideal; as he tells us in his "Sleep and Poetry"—

"Forgetting the great end
Of Poesy that should be a friend
To soothe the cares and lift the thoughts of man."

And again—

"They shall be accounted a poet-kings,
Who simply tell the most *heart-easing* things."

He found his material for the poem of our study in an old Greecian legend of a youth who fell in love with the moon goddess Artemis. Keats said of it, "A long poem is the test of invention; and if I can make four thousand lines out of this one bare circumstance and fill them with poetry, it will be a test of my invention."

He uses the material, however, in a somewhat allegorical sense. The development of the human soul, the unity of life is the theme; beauty and love are the ideals for which one should strive, and for which Endymion does seek and at last finds.

In this fourth book of the poem the author uses external nature to give an appropriate background or environment for the mythical people who are to inhabit this dream-world which he is constructing. In his address to the Muse in the first stanza he associates her with the mountains, hues of heaven, northern grot, regions wild, in deep prophetic solitude. And throughout the poem the picture of the woodland environment is constantly suggested; for example, while Endymion is offering up his vows to "heaven's airy dome" he hears a voice and peers through the "thorny green entanglement" and listens. The being is bemoaning her fate that she has no lover and wishes that she had Hermes' wand to touch the flower at her feet and let young Hyacinthus escape from his

green prison that he might worship her and call her queen. Again Endymion's environment is suggested as he "springs from his green covert" or "leans wretched upon a bow." In connection with this use of nature the poet appeals to the senses, especially to those of sight and touch; for example, after the maiden's song is finished Endymion stands gazing at her, but

"Listening to the wind that now did stir
About the *crisped* oaks *full drearily*
Yet with as *sweet* a *softness* as might be remembered
From its *velvet summer song.*"

In this we feel the touch of the gentle breeze.

We have also many fanciful pictures in this part that constantly appeal to the sight; as,

"For by one step the blue sky thou should'st find
And by another in deep dell below
See, through the trees a little river go
All in its mid-day gold and glimmering."

Here we get the idea of depth, of perspective, "clothing with concrete beauty the abstract idea of distance." As another example of this we find the following from another part of the poem:

"And now as deep into the wood as we
Might mark a lynx's eye, there glimmered light
Fair faces, and a rush of garments white."

Probably the best picture given is of the home which Endymion describes for himself and Cynthia under the brow of a "mossy hill" covered with ivy, among dark yew trees, where he would provide her "with honey from the gnarled hive," and "apples and cresses;" and for her delight he would "fill the brook with fairy fishes" and "pebbles many colored," and plant "eglantine by the river's bank;" he would appeal to the gods and goddesses—to Vesta, Diana, Phoebus, Vesper, Flora—to help him in attending upon his love. This picture, however, does not come up to Keat's palace of the Great God Pan, or to the cloud palace of Hyperion, though Endymion's picture is probably more true to nature than either of the others.

Again we find external nature used as symbolic of mental states. In the description of the Cave of Quietude no sounds reach the interior, no disturbances from the outer world are heard, though the "woe hurricanes beat ever at the gate"—a description of the human soul under certain conditions. This device is commonly used by Shelley, as we find, for example, in Alaster, but is not so frequently used by Keats.

Keats has enriched the beauty of his pictures by making much

use of color, but he does not use it so lavishly here as in Lamia or Hyperion. Of the color effects used green is most frequently noted, while blue, black, silver and gold are about equally used, and red very much slighted. Besides these pure-color words we find words that suggest color, or light and shade, such as twinkle, sparkle, glossy, flush, bright, semilucent, pearly, frosty, misty. Take one example as a use of color words:

“And as she spake, into her face there came
Light as reflected from a *silver* flame,
Her long *black* hair swelled amplier, in display
Full *golden*; in her eyes a *brighter* day
Dawned *blue* and full of love.

Note also the harmonious arrangement of the colors in the lines—silver, black, golden, blue.

Keat's use of flowers seems to indicate an acquaintance with this phase of external nature, especially with the members of the English flower garden; but he uses them apparently as an appeal to the sense of smell rather than to that of sight. Take, for example, the flowers that were to be brought in baskets to Cynthia's wedding feast, “fennel green, balm, and golden pines, cool parsley, basil sweet, and sunny thyme.” And when Endymion is describing the home that they will make he says that he will plant the banks of the stream with “dew—sweet eglantine,” and “honeysuckles full of clear bee-wine.”

He refers to the Hyacinthe only for the sake of the Grecian legend connected with it, and uses the combination of “musk rose” and “new mown hay” for the appeal to the sense of smell, while he occasionally refers to the rose, the lily and the primrose to give certain color effects, as “tinged with rose and amethyst” and “lily white” and “wan as a primrose.”

He seems not so familiar with trees as with flowers, for specific trees are seldom mentioned; but only “forest trees,” “summer trees,” “beechen tree,” “teeming tree,” “midmost forest tree,” general terms to give the impression of the forest as a whole.

As an example of the figurative use of nature we choose the following:

—“he bows
His head through thorny green entanglement
Of underwood, and to the sound is bent
Anxious as hind towards her hidden fawn.”

The figure of the startled, watchful deer is especially apt and striking. Another example:

“It seemed as when around the pale new moon
Sad zepher droops the clouds like weeping willow.”

And again:

"The moon put forth a little diamond peak,
No bigger than an observed star—
Bright signal that she only stooped to tie
Her silver sandals ere deliciously
She bowed into the heavens her timid head."

A fanciful picture but typical of Keats.

In summing up his treatment of external nature in this book, we find that he uses it as appropriate environment for the gods and goddesses of his mythical story; as a medium for mere sensuous appeal to the beautiful; as symbolic of conditions of the human soul; as necessary to figurative diction; and that to aid in these effects he makes use of color, of flowers and trees, and of stars as objects of especial value to the poet.

After studying his poetry we feel that the difference between Keats' use of nature and Wordsworth's use of it, is that the former created his nature, while the latter poet portrayed truth in nature.

Mathew Arnold says of Keats that he has the "Greek lightness and brightness in handling nature." His use of it pleases, and therefore it serves its end and purpose.

ADA RICE.

Qualities of Oratorical Style.

(Continued.)

IN No. 21 of the current volume of THE INDUSTRIALIST I mentioned some of the general qualities of style essential to oratory. In this present paper it is my desire to point out some of these qualities more specifically.

If I were called upon to state one maxim, that more, perhaps, than any other expresses the secret of success in oratorical composition, I could hardly do better than say, "Make yourself understood."

In oratory, preeminently, must be exemplified the precept of Quintilian: "*Non ut intellegere possit, sed ne omnino possit non intelligere, curandum;*" that is, the speaker must take care not simply that it may be possible to understand him, but that it be absolutely impossible to misunderstand him. I am not now speaking, of course, from the pessimistic standpoint of those who agree with Talleyrand, that language is a device for concealing thought. It may be conceded that the statesman or the politician may have occasion now and then to speak in "glittering generalities" which seem to be the last utterance of wisdom, while, in reality, they mean anything in general or nothing in particular; or, to utter

high-sounding phrases, that appear to express very definite ideas, but that, on analysis, are found to apply equally well to notions absolutely antagonistic in meaning. I am speaking, rather, from the standpoint of those who have positive opinions and are sincerely desirous of expressing those opinions. Such men would speak without prevarication or ambiguity. So they must seek first of all the great quality of clearness.

Clearness of style manifests itself in two directions:

In the first place, the speaker, to be effective, must leave no means untried to fit his expression to his thought. His speech should be a perfect mirror of his ideas, expressing precisely what he means, no more, no less, no other. So he should brood over his choice of words; so should he shape and mould his sentences until both words and sentence structure bend precisely to his thought.

In the second place, the speaker, to be effective, must fit the expression of his thought to his audience. That is, he must not only say what he means, but he must make his hearers know what he means. It is possible to be faithful to the thought and still not be understood. The speaker has, therefore, a two-fold problem to solve. He must say what he means and he must make his audience know what he means. He should make his style so simple and transparent that his language may be a perfect vehicle for his sentiment to convey that sentiment to the minds and hearts of others. There is a lake in Michigan whose waters are so clear that a boat resting on its surface seems to be poised like a bird in the air, while pebbles and fishes can be plainly seen upon the bottom fifty feet below. Like that jewel glowing on earth's bosom, should be the language of the orator, so limpid as to attract no attention to itself, but serving simply as a medium in which his thought floats, without obstruction, before the mental vision of the hearer.

"But," some one may argue, "it is well enough to say to the orator, 'Be precise,' and 'Be perspicuous;' but how shall he fulfil the demand? What are the conditions?"

In response to this challenge, we may say in general, that clear speaking necessitates clear thinking. "No man can say plainly what he has not first thought plainly." If his language is hazy, probably his thought is foggy. On the other hand, he who has thought through his subject from beginning to end will be pretty likely to speak of that subject, when the time comes, with accuracy and in such a way as to make himself understood. He will march confidently and directly through the mazes of utterance because his mind has first explored the course and blazed the way.

The first question, then, that the speaker should ask himself, in aiming for clearness of expression, is this: "What is my thought?" Not, "What is nearly my thought?" not, "What is approximately my idea?" not, "What will do?" but, "*Precisely* what is my thought?" Anything short of this is inadequate. Not until this question is answered is the speaker prepared to discuss his subject luminously and, therefore, effectively.

After he has settled this matter satisfactorily, the speaker is ready to put to himself the next question of his oratorical catechism; namely, "Does this precisely express my thought?" In finding an affirmative answer to this question he will illustrate a two-fold process—the process of choosing words that shall exactly fit his idea, and the process of constructing sentences that shall exactly express that idea.

The former of these processes may necessitate a long and perhaps painful search—a browsing through the dry pastures of lists of synonyms, a dragging of the net through the deep sea of bulky dictionaries. But let him not withhold his hand till he has exhausted the resources of the language to find the one word that he wants. The word is there; let him fish till he catch it.

The latter process, that of clear sentence structure, may necessitate a casting and recasting, a modelling and remodelling, a turning upside down and inside out, of his sentences, before they are so shaped as most lucidly to express his thought. This may seem a slow process, but the end justifies the means. Such painful toil is the price of excellence. Edmund Burke, it is said, rewrote some of his speeches no less than fifty times before they took the form in which he was willing that they should finally rest as the perfect expression of his thought. Thus, through the long agony of persistent toil he endured the penalty that must be paid if he would make of his works the noblest body of political philosophy in all the world, and at the same time carve his own name high in the temple of fame. The importance of care in the choice of words cannot be too strongly insisted upon. Without such care precision is out of the question. Ours is a composite vocabulary. It would seem as if the sons of men, that were scattered abroad "upon the face of all the earth" by the confusion of tongues at Babel, had met in convention on the shores of Britain and, each contributing his own speech, had formed the English language. When, on the day of Pentecost, "Parthians and Medes, and Elamites, and the dwellers in Mesopotamia, and in Judea, and Cappadocia, in Pontus, and Asia, Phrygia, and Pamphylia, in Egypt, and in the parts of Lybia about Cyrene, and strangers of Rome, Jews and

proselytes, Cretes and Arabians," heard "every man in his own tongue, wherein he was born," one can almost believe that the apostles secured the marvelous result simply by speaking English. Our language derives its wealth and power from a multiplicity of sources. In addition to its deep soil of Saxon words, its vocabulary is enriched by multitudes of derivatives from the Latin and Greek, from Arabic, Hebrew, Persian, Ethiopian, Russian and North American Indian, from French and Italian, from the German and Scandinavian and many other tongues. Consequently we have many expressions nearly alike in sense, yet with slightly different shades of meaning. Accurate command of the language requires careful study of these words in their derivation, history, and use by standard authors. Precision in the use of language demands that there be no confusion of synonyms.

To illustrate: suppose we wish to express some form or degree of mental unsoundness. Shall we say "insanity," "dementia," "aberration," "alienation," "madness," "derangement," "lunacy" "mania," "delirium," "frenzy," "monomania," "delusion," "melancholy," "hypochondria," "craziness," "imbecility," "foolishness," or "idiocy?" There is one word and only one that precisely fits the case. Until that one word is found the task is not ended.

Want of precision is not infrequently due to the inaccurate use of words that indicate a condition for those that tend to produce that condition. For instance, when the reformer proclaims cigarettes to be "unhealthy" he probably means that smoking them is "unhealthful." The cigarettes themselves may be in perfect health.

Great care should be exercised, also, in avoiding a provincial use of terms. We Americans are frequent offenders in this particular. A single example will serve to illustrate: the word "clever," as used by the best writers, signifies "skillful" "sagacious" "adroit;" on this side of the Atlantic, however, it is frequently used as synonymous with "good-natured," "generous," "accommodating," or "agreeable."

It is not necessary here to discuss at length the value to the speaker who would accurately express his thought of a critical study of the meaning of words. The few illustrations above given sufficiently show that such study has supreme value. Dr. Austin Phelps thus emphasizes the importance of this patient groping for the right word: "Do we not," he says, "often fret for the right word, which is just outside of the closed door of memory? We know that there is such a word; we know that it is precisely the word we want; no other can fill its place; we saw it mentally a

short half-hour ago; but we beat the air for it now. The power we crave is the power to store words within reach, and hold them in mental reserve till they are wanted, and then restore them by the unconscious vibration of a thought. *Nothing can give it to us but study and use of the language in long-continued and critical practice.*" Again he says: "By such studies, when combined with scholarly use of language in a laborious profession, a man masters words singly, words in combination, words in varieties of sense, words in figurative uses, and those forces of expression which always lie latent in original uses of one's mother-tongue." C. M. BRINK.

*Evolution of the College Student.—III.**

THE DEPARTURE.

A HOME SCENE.—Witness for a moment the last hours of the country boy's preparation before departing for college. The mother is hurrying about in an effort to get everything carefully packed away in the trunk. Although she lay awake a long time last night running over mentally again and again the many little articles, she still seems to be fearful of forgetting something.

This mother has perhaps always been over indulgent with her boy, but now she simply cannot think of anything that is too good for him. It is not unlikely that there is a feeling of weight around her heart, while she experiences considerable difficulty in suppressing her emotions. In strange contrast with custom the father has gone to the barn and hitched the team to the spring wagon, and he also does many other little acts that show a disposition on this occasion to treat the young man as "select company."

The young man has perhaps for the first time discovered that he is something of a stranger to himself. His conduct during the entire morning is marked by the utmost forebearance and kindness. While his mind is reverting to many of the little shortcomings of his past life or picturing in imagination the manner in which home affairs will go on in his absence and the many perplexities that will attend his journey's end, he experiences a great variety of feelings, many of which are somewhat unpleasant. He is proud of his new clothes, however, for they form so strange a contrast with the old ones just thrown off. There are at least two matters of which this youth is morally certain just now: first, he ought to have been more faithful in the discharge of his duty in the past; and second, he has a strong determination to be in every respect more of a man in the future.

*Nothing contained in my last paper was intended to reflect discredit upon the Preparatory Department of this College, wherein the regular instructors, as I believe, are doing work that ranks in efficiency with that of any of the other departments.

All is in readiness. There are hurried farewells, and to the mother's parting admonition, "Don't forget to write just as soon as you get there, John," there is the ready reply, "No, I won't. I'll write every week." The mother hurries back into the house to become busily engaged with her work, and her thinking, and her tears. While the father and son are driving to the station, the former with unusual frankness discusses home affairs, especially the financial ones. Although pretending to be indifferent and unmoved, this father feels the deepest concern for the future welfare of his son, and his frankness of speech is in fact the outcome of his desire to impress the boy with the idea that there must be strict economy in the matter of college expenses.

A NEW CONSCIOUSNESS.

It is likely that in every life there are periods of dull monotony. It is conceivable, too, that the matters on a fairly well-regulated farm may proceed for months, or even years, without there coming to pass anything that would be considered a real turn in affairs. If this is a true description of a condition in the average farm home, it is also a fact that the first departure for college of one of the children of that home partakes of the nature of a real event.

Now it is here that I find justification for writing this commonplace account, *viz.*, to point out the fact that this going away to College just described brings about a crisis in the thinking of both the parents and the son. There is a tremendous shaking up of old ideas in all their minds. New hopes, new anticipations, new responsibilities, new resolutions, and renewed affections—these at least are just now characteristic of the consciousness of the three persons named.

A whole set of fresh ideas as to who and what he is and what he might dare strive to be and to accomplish, and what his new relations to others are to be—these are the more specific data of the young man's new consciousness. Now, the really significant fact in the whole story must be noted again here. It is this: If this young man is going away to college voluntarily and not being at all pushed out, the whole trend of his thinking is, just now, *in the direction of a worthier manhood*. He is strongly resolved to study faithfully, to form good companionships, to make the most of his opportunities, and to show a fuller appreciation of his parents and what they have done for him. But, "If to do were as easy as to know what were good to do, then chapels had been churches and poor men's cottages princes' palaces." Will the young man be

likely to carry out his many good resolutions? This matter depends upon a chain of circumstances, as we shall see.

(To be continued.)

W. A. MCKEEVER.

Women's Work in Kedzie Hall.

The winter-term exhibition of the Domestic Science and Domestic Art Departments last Wednesday in Kedzie Hall was a notable event in the history of the College. It strikingly showed the progress made in these lines the last half-dozen years. About two hundred fifty invited visitors were present, and members of the Faculty and many students thronged the building all day eager to taste the products of the different classes in cooking and to see the beautiful exhibits of the classes in sewing and dressmaking.

Prof. Henrietta Calvin and her assistants, Miss Rose and Miss Monsch, of the Domestic Science Department, had provided a working exhibit in food preparation. The senior young women served creamed oysters in croustades and chicken soufflé in ramekins, in the north laboratory. One section of the short-course girls was stationed in the south laboratory serving Parkerhouse rolls and coffee, while a second section was busy in the basement serving orange Bavarian and marguerites. The visitors were given the opportunity to see the food in process of preparation, and many of the ladies made copies of the recipes served and asked questions concerning the details of their preparation.

The Domestic Art exhibits were on the second floor of the building, and filled several large rooms. There were over a hundred all-wool or silk garments exhibited, and over one fourth of these were shown on dress forms. These beautiful dresses were the work of the sophomore and second-term short-course girls. The third-term girls exhibited a large number of well-made shirt-waist suits. The second-term girls exhibited over sixty suits of dainty undergarments. There were also on exhibition a number of class note-books containing samples of the work of the first term showing the combination of stitches, samples of mending, darning, etc.

The visitors present were enthusiastic in their remarks about the variety, character and educational aspect of the work of the classes in Domestic Art and many a high compliment was paid to Miss Antonetta Becker, the superintendent of the department, and to Miss Maud Coe and Miss Gertrude Stump, her assistants. It is to be hoped that these term exhibits will be continued in the future. They are a strong inducement for students to exert themselves in their work, they awaken a commendable pride and enthusiasm among those who succeed, and they are a proper advertisement of the College and its domestic science course.

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Local Notes.

Student H. Bixby, of the junior class, bought himself a \$114 new double-bell euphonium.

Ex-regent Ed. Secrest, of Randolph, has lately presented the College Library with a number of interesting books.

The Experiment Station has lately received a number of packages of seeds from the Denmark Experiment Station, at Noskow.

The *Farmers' Advocate* publishes the address delivered by Prof. O. Erf, of this College, before the National Dairy Association at Chicago, February 15, 1906.

The farmers' institute committee of Franklin county shows its interest in the boys' corn-growing contest by offering \$300 in prizes. Let the good work go on.

Mr. Troutman, of Lyon county, who has several children at College, was about College last Wednesday to look for a young or chardist whom he might send to his farm in Lyon county to take care of a large orchard.

Institute Secretary J. H. Miller will address the teachers of Douglas county, at Lawrence, on March 31, on the subject of "Corn Growing and Boys' Corn Contest." Institutes will probably be held in Jefferson and Leavenworth counties the first week in April.

The Music Department will start giving its monthly recitals about the first week in April. Each recital will contain from ten to twelve numbers, consisting of piano and vocal solos and instrumental pieces. They will be given at 8 P. M. in the Auditorium, and will be open to the public.

Miss M. E. Barbour's classes in calisthenics have given a series of exhibition drills and basket-ball games during the past two weeks, to which a number of interested persons were invited. Nearly 200 visitors were present at these drills, and all expressed themselves highly pleased by the precision and grace of the exhibited movements and evolutions. The department is certainly doing good work.

The Athletic Association will open the spring season in first-class shape financially. The baseball and track teams are all well provided for. The Rooters' Clubs are entitled to much credit for the part they have taken to bring about existing conditions. The baseball season will open with the following schedule already signed up, with prospects for more: St. Paul, April 2; Nebraska, April 11; Washburn, April 14; Emporia College, April 17; Ottawa, April 27; Baker, May 1; K. S. N., May 5; Fairmount, May 10; K. U., May 21; Friends, May 26; Haskell, June 9.

The College Y. M. C. A. has lately issued a very neat pamphlet showing the status of the building campaign. The pamphlet gives a perspective view of the intended building, several of the floor plans, a statement of the complete cost, and a description of the interior arrangement. From its pages we gleam that it is the intention to build a \$30,000 Home. The total amount of the subscriptions is \$22,332. Six hundred ninety-five subscribers gave an average of \$32+, each. The association needs about \$8000 to cover the probable cost, and hopes to be able to raise the amount before July.

The Choral Union gave a banquet to its members and a number of invited guests last Monday night in the Women's Gymnasium. Over one hundred persons were present, among them Pres. E. R. Nichols, and Profs. Olof Valley and J. E. Kammeyer. The Choral Union and the Glee Club each sang several songs and Professor Valley gave the audience some of his best solos. President Nichols and Professor Kammeyer gave short addresses. The refreshments were dainty and duly appreciated, and young and old enjoyed themselves till 10:30, the invariable time limit of all College gatherings.

Plans have lately been perfected for the improvement of the Athletic Park. A new grand stand is to be built that will accommodate the spectators who want to watch the "ins and outs" of the game. It will be built directly back of the home plate, and will be screened and covered. The seats will be reserved for the season for one dollar a seat. The old grand stand will be moved up against the west end of the new stand. A small building will also be built for a dressing room and baths. Another improvement will be a track for track meets, which will be built around the field just inside the fence.

President Nichols went to Topeka last Saturday to attend the annual meeting of the Kansas College Athletic Conference and assisted in making a number of important changes with regard to summer baseball. Among these changes are the following: Any person who plays in more than two games of summer baseball shall not be allowed to play on a College team. Each player will have to make a sworn statement of his eligibility, and this, with the list signed by the president, will be sent to the secretary, who will furnish each College with copies of same. Another change made was in regard to the class work required of a player. At least twelve hours work must be carried by a person playing on any team, and at least eight hours of this work must be recitation work. No matter what amount of work is carried by a player, he shall be declared ineligible unless he carries all of it satisfactorily. Action was also taken on the freshman rule, in case of small colleges. From now on, all schools having an enrolment of less than four hundred students will be allowed to play freshmen. The following officers were elected: President, Pres. E. R. Nichols, K. S. A. C.; vice-president, Professor Woods, Washburn; secretary and treasurer, Professor Wilber, K. S. N.

Professor Willard and Institute Secretary Miller left for Lindsborg, McPherson county, on Thursday noon to hold a farmers' institute. From there Professor Willard will go to McPherson to make arrangements for Experiment Station work.

The bill for increasing the appropriations made by the government to each state or territory for the maintenance of an agricultural experiment station from \$15,000 to \$30,000 a year passed the House, February 15, the Senate, March 12, and received the signature of President Roosevelt, March 20. Under the provision of the bill the appropriation made will be increased \$5,000 this fiscal year and \$2,000 additional each year thereafter for five years, until the total increase, as stated, will be \$15,000 annually. The bill was fathered by Congressman Adams, of Wisconsin, and received the unanimous vote of both houses of Congress. A copy of it will be published in the next INDUSTRIALIST. The increased appropriation will enable the agricultural experiment stations to widen the scope of their work and thereby benefit the farmers of the states in which they are located. Some idea of the estimation in which the work of the stations is held can be gained from the fact that there are 731,000 names on the mailing lists of the various stations, and that last year there were sent out 7,500,000 agricultural experiment station bulletins. The mailing lists are made up on the requests of men who want the literature of the stations, and no bulletins are sent out indiscriminately.

Alumni and Former Students.

Nannie Williams, '99, who has been in St. Louis for some years, writes to have her address changed from 4050 McPherson Avenue, St. Louis, to Rural Route No. 2, Gardner, Kan.

Bishop and Mrs. Mackay-Smith, of Philadelphia, announce in the papers of that city this morning the engagement of their eldest daughter, Helen, to Mr. Charles Lester Marlatt ['84], of this city. Mr. Marlatt is the assistant chief in the bureau of entomology and is well known socially. He is a member of the Cosmos Club and is highly thought of in the scientific circles of the capital. He is also a member of Chevy Chase Club and was the winner last fall of the golf trophy given by the Siamese minister. The wedding will probably take place during the summer at the bishop's country home, at Mt. Desert, Maine. Miss Helen Mackay-Smith was practically raised in this city, where she made her debut before her father was made bishop. She is a charming girl with many accomplishments, and has hosts of warm friends here.—*Washington Star.*

NOTICE.

The second annual banquet of the Chicago K. S. A. C. Alumni will be held at the Saratoga Hotel, April 21, '06. Any alumni or former students of K. S. A. C. in Chicago or vicinity who do not receive an invitation will confer a favor on the association by addressing Pres. D. G. Robertson, at 153 La Salle street, or the secretary, at 4145 Indiana Ave.

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No. 27

Proper Names as a Source of our Vocabulary—II.

IN No. 24 of THE INDUSTRIALIST I discussed the indebtedness of our vocabulary to personal names and divided these into the following groups: (1) Given names (Christian names), (2) Bible characters and saints, (3) mythological personages, (4) characters from fiction, (5) famous historical characters, (6) names of minerals (a group of surnames from the viewpoint of result), (7) miscellaneous surnames, and (8) personal names now becoming a part of our common stock of words. To the third group above may be added a list of proper adjectives as a sub-group. I refer to bacchant, bacchante (past participle forms from Lat. bacchari, to celebrate the feast of Bacchus), jovial (originally, of or pertaining to Jove), marchpane (a confection, probably from Lat. Martius panis, bread of Mars), martial (from Lat. martialis, of or pertaining to Mars), mercurial, saturnine, etc.

It is proposed to make the following lists as fair as possible an assay of a very large group of words.

II. PLACE NAMES.

1. *Town and City Names.*—The name of the mineral allemontite is derived from Allemont or Allemond, a French village. A tapestry, arras, was originally draps d'Arras, *i. e.*, cloth of Arras (France). The Russian city and province Astrakhan have given us the name of a pelt, astrakhan. A confused mixture of sounds derives its designation, babel, from the Semitic name of the city Babylon where, according to Gen. XI., the "confusion of tongues" took place. The name of a variety of chicken is taken from Bantam, Java. The noun bedlam, with its several derived forms, comes from Bedlam, short for St. Mary of Bethlehem, a hospital in London later used as a lunatic asylum. The name of a carriage, berlin, is so called from Berlin, Germany, it having been first made there. A bezant, gold coin, represents Byzantium, *i. e.*, Constantinople, where the coin was issued in the middle ages. Bilboa, Spain, has given us the name of a sword made there, the bilbo. A cloth, calico, is so named from the city whence it was first imported, Calicut (in early modern English Calicow, Caleco),

India. The name of the cloth, cambric, is from Cambray, a town of France, where it was first manufactured. A machine-made lace, cambrai, receives its name from the same town. We have also chambray, another form of cambrai. The cantaloup has its name through French from Ital. Cantaloupo, the town where it was first raised. The term cologne was at first merely an abbreviation of Fr. eau de Cologne, corresponding to Germ. kölnisches Wasser, Cologne water, named from the city of that name on the Rhine. The cracow, a long-toed boot, is so called from Cracow, Poland, whence it was introduced. Damascus, also damask, etc., is from Damascus, the city which gave its name to several fabrics of iron and steel, and of silk, and to a plum. The cloth, dornick, receives its name from Dornick, Old Flemish of Tournay, a town in Belgium where this cloth was originally made. The florence, gold coin, etc., and the florin, gold coin, derive their designations from Florence, Italy. A certain cotton fabric bears the name gingham because it was first made in Guingamp, a town in Brittany. The name of a silver coin, jane, represents Fr. Genes, an older form of Genoa. A cotton cloth, jean, has probably the same source as jane. Gagas, a town (also river) in Asia Minor, is responsible ultimately for our word jet, a mineral, etc. From Jamestown, Va., came the Jamestown-weed, later shortened to jimson-weed. The landau is so named from Landau, the town in Germany where such carriages were first made. The mineral lansfordite occurs in a mine at Lansford, Pa. A tobacco, latakia, is produced near and shipped from Latakia, Syria. The mineral laubanite is found at Lauban, Germany; laurionite is a mineral occurring at Laurium (Laurion), Greece. Laon, formerly also Lan, a town near Rheims, France, has given us lawn, the name of a cloth. The explosive lyddite is so called from Lydd, in Kent, England. The color magenta was discovered in 1859, the year of the battle of Magenta (Italy). The term manila is derived from Manila, P. I., whence the article is shipped in great quantities. The coffee, Mocha, is properly that produced in Yemen in Arabia, Mocha being its port. Morocco, short for morocco leather, was originally Morocco, from which city the leather first came. The cotton cloth, nankeen, receives its name from Nanking, China, where it was first manufactured. The pistol, a firearm but formerly the name of a dagger, owes its designation to *Pistola, later Pistoria, now Pistoia, a town in Italy. The wine, port, is named after Oporto, a city in Portugal whence the wine was originally shipped. Quince, quine, is indirectly from Lat. Cydoneum (malum), literally apple of Cydonia, an ancient Greek city of Crete.

Schwaz (Schwartz, Schwarz), Austria has given us the name of the mineral schwatzite. The sedan, sedan-chair is said to be named from Sedan, France. The wine sherry is so called from Sherris (Xerxes), Spain where this wine is still made. From Shanghai, China, comes the name of the fowl, shanghai; this is also the source of the verb shanghai, literally to ship to Shanghai, representing any distant port to which persons so treated are shipped. The mineral siegenite is found at Siegen, Prussia. From Sienna, Italy, where it occurs, is derived the term sienna for the pigment. Tarantella, a dance, tarantism and tarartismus, a dancing mania, and tarantula, a large spider, are all designations having as their source Tarentum, a town in the south of Italy. A balsam, tolu, short for balsam of Tolu, is so called because brought from (San-tiago de) Tolu, Colombia. A fine and thin silk net has its name tulle from Tulle, France. Valance, valence, a cloth, derives its name from Valence, France, still famous for silks.

2. *Islands, Valleys, Mountains, Hills, Rivers, Etc.*—Canary, wine, bird, etc., is from Canary Islands. From Chartreuse, a French valley, we have chartreuse, the name of a cordial, also of a monastary. The breed of sheep found in the Cheviot Hills gives us the wool, cheviot. The chimera, a fabulous animal, is named after the mountain of that name in Asia Minor. The island of Guernsey in the British Channel is responsible for the term guernsey, a woollen skirt. A breed of domestic fowl, java, is so called from Java, East Indies. The Channel island, Jersey, has given us the designation jersey for a yarn, also a garment. The word kaolin represents Kaoling, the name of a hill in China where this clay is found. Meander, meandrian, meandrous, etc., are taken from Gr. Maiandros, a river, now called Mendere, which flows with many windings into the Aegean Sea. From the Greek name of a fish caught near Sardinia comes the term sardine, and this is probably identical with the name of the island. Sardel, sardelle has the same meaning and source as sardine. Vaudeville is the name given by Oliver Basselin, a French poet of the fifteenth century, to his convivial songs composed in the valley of the Vire (val-de-vire, vau-de-vire).

3. *Counties, Districts, Etc.*—The mineral albertite derives its designation from Albert County in New Brunswick where it is found. Buncombe, bunkum, empty talk, has its name from Buncombe Co., North Carolina. From the county of Derby, England, we have the name of a hat, also mason's implement, derby. The mineral lanarkite occurs in Lanarkshire, Scotland. The term latialite is derived from Latium, an ancient name of that part

of Italy where the mineral is found. Likewise from Latium comes latimer, the same as Latiner, one skilled in the use of Latin. The mineral limburgite receives its name from Limburg, a former duchy, now divided between the Netherlands and Belgium. Magnesia, a mineral, is so called from the district of that name in Greece. From County Surrey, England, probably originated the name of the phaeton of that name. And the designation ulster is from Ulster, a province of Ireland, where this long, loose overcoat was originally made.

4. *Countries.*—The variety of fowl, brahma, is an abbreviation of Brahmaputra, hen of India, Brahman hen. From Cashmere, a state in the Himalayas, a certain woolen fabric receives its name for the reason that it was first made there. Cassimere and kerseymere are variations of the same word, and of course have the same source. The wine champagne is so called from the former French province Champagne, where it is manufactured. China is short for chinaware, where the first part of the compound is China. There are numerous other common nouns which contain china (*i. e.*, China) as the first part of the compound. A guinea, gold coin, is so called because first coined of gold brought from Guinea. Certain compounds, guinea-hen, etc., are likewise named from Guinea. Both holland, a linen, and hollands, gin, have as their source the name of the country. The varnish, etc., japan and derivatives represent the name of the Yankeeland of the East. A woolen material, saxony, takes its name from the Kingdom of Saxony. The same name with the suffix *-ite* gives us the name of the mineral saxonite. For want of a better opportunity, tartar, argol, may be mentioned here. This is apparently so called for some fanciful reason, and is from Tartarus, a deep and sunless abyss, Hades. A number of derivatives have sprung from tartar. Tasmanite is a term formed of Tasmania, where this fossil resin is found, and the suffix *-ite*. Our word turkey is an abbreviation for Turkey-cock or Turkey-hen, in which cases Turkey stands vaguely for Asia, whence the bird was supposed to come.

5. *Citizenship, Nationality.*—A bohemian, unconventional artist, etc., has his title from Fr. bohemien, gipsy, which is identical with Bohemian. The cravat is so called because it was adopted from the Cravates or Croats in French military service. The term gipsy for one exhibiting any of the attributes of Gipsies is a reduced form of early modern English Gipsen, Gypcian, etc., from Egyptian. The Gipsies were popularly supposed to be Egyptians, a belief reflected in some other languages; compare, however, bohemian. About ten words of our vocabulary originate from Gipsy.

To jew, jew down, is an illusion to the sharp practises ascribed to the Jews. The lapp-owl is the great gray owl of Lapland, and other northerly regions. A public pawn-shop bears the name lombard from the fact that many Lombards or Italians in England were engaged in money-lending. The appellation martingale for a piece of harness is a particularisation of the meaning "a pair of breeches," from Martigal, an inhabitant of Martigues, France. The term milliner, formerly millaner, was originally Milaner, a trader from Milan (Italy), a city famous for its silks and ribbons. Schweitzerite is from German Schweizer, Swiss, with suffix -ite, the mineral being found at Zermatt, Switzerland. The word slave means, properly, one taken in war; it originally signified a Slav (taken in war). Vandal and vandalism are identical with the race name Vandal, and are so termed because of the ravaging of Rome by the Vandals in the year 455. Voodoo, voudou from creole French vaudoux, a negro sorcerer, was probably originally a dialect form of Vaudois, a Waldensian (the Waldenses, as heretics, being accused of sorcery). We have also a familiar by-form of voodoo, namely hoodoo.

6. *Proper Adjectives*.—The plant-name alexander is from Middle Latin Petroselinum Alexandrinum, Alexandrine parsley. From the French adj. Allemand, German, we have the fem. form allemande, a musical term, also a dance, etc. The word arabesque, occurring as noun, adj. and verb, means properly Arabic, and has come to us through the French from Ital. arabesco. The adj. artesian has as its source Fr. artesian and receives its name from Arteis, the O. Fr. form of modern Artois (France), where the first "artesian" well was sunk. Barbaresque, characteristic of barbarians, is derived through French from barbaresque, of Barbary; cf. arabesque. A bungalow, one-story dwelling with veranda, is literally Bengalese (house). Chalcedony, with its by-forms calcedony and cassidony, represents Lat. chalcedonius (prop. adj. "of Chalcedon"), from Gr. chalkedon, a precious stone found at Chalcedon, an ancient Greek town in Asia Minor. In lateen we have phonetic spelling of Fr. latine, for voile latine, Latin sail, alluding to its use in the Mediterranean. The name of the dance, morris, comes to us through Old French from Span. Morisco, Moorish. There are also the compounds morris-bells, morris-dance (-er, -ing), morris-pike. A piece of furniture (also a corded silk) has its name ottoman from Fr. ottomane, a kind of couch or sofa, fem. of ottoman, Ottoman, Turkish. The term picard for a shoe worn by men, introduced into England about 1720, is taken from Fr. Picard, belonging to Picardy. The word peach was

borrowed very early as the Middle English forms (peche, pesche, pesk) and Old English persuc, persoc, pesca indicate. The immediate source is Lat. persicum (malum), literally Persian apple. Our polonaise, a dress, dance, music, derives its designation from Fr. polonaise (a dress, music), proper adj. Polish. Sard, sardius, sardoin, sardine "carnelian," literally "Sardian stone," are derived from the name of the Grecian city Sardis. Sardonyx (sard onyx) and sardachate (sard agate) have the same source. Sardonian, sardonic from Lat. sardonicus (risus), sardonic laughter, is believed to be so called as resembling the effect produced by a certain Sardian plant, said to distort the face of the eater. The polka schottische, shottish is borrowed Germ. schottische (Tanze), Scottish (dance). Scotch shelty, sheltie is said to be an abbreviated diminutive of Shetland pony. The bleaching-term swissing is a verbal noun of the verb *swiss, the latter derived from Swiss. Indirectly from Middle Latin tartarinus (pannus), literally Tartar cloth, comes tartarine, the name of a cloth. There is also tarse with the same meaning and source.

7. *Proper Nouns Becoming Common.*—As is the case with personal names so here we find many place names giving rise to common nouns. The following are typical: bologna, brussels, burgundy, cayenne, frenching, havana, kensington, (lilliputian), limerick, mackinaw, madeira, magnolia, maltese, oxfords, panama, philistine, sequoia, and shetland.

JOHN V. CORTELYOU.

Swine Feeding Tests.—Armour's Deodorized Meat Meal and Alfalfa Hay as Supplementary Feeds to Corn.

Press Bulletin No. 149, from Animal Husbandry Department.

Numerous questions are being received at the Kansas Experiment Station as to the value of the various packing-house by-products recommended for swine feeding in connection with corn, and during the winter of 1905-'06 an experiment was carried on to secure more data on the subject. The value of alfalfa hay as a means of increasing the value of corn in pork production was also made the subject of one test in this experiment. Its value for growing swine and breeding stock has been recognized for some time, but its value in the fattening pen is still a subject of inquiry. Thirty strong, thrifty shoats were available for this experiment, and they were divided as equally as possible into three lots of ten pigs each. The pigs were all crossbred, and in the division an equal number of each particular cross were placed in each of the three lots as follows: Three Berkshire x Yorkshire pigs, three Berkshire x Tamworth pigs, two Poland-China x Berkshire pigs,

and two Poland-China x Duroc-Jersey pigs. The average weights of these three lots on October 9, 1905, when the experiment began, were as follows:

Lot I, 129 pounds; Lot II, 127.5 pounds; and Lot III, 131 pounds.

The rations were as follows:

Lot I, corn-meal.

Lot II, corn-meal $\frac{5}{8}$ and Armour's deodorized meat-meal $\frac{1}{8}$.

Lot III, corn-meal and all the alfalfa hay they would consume.

A feed rack was used for the alfalfa hay similar to a sheep rack without legs. This method kept alfalfa hay before them at all times without waste. The hay was fed uncut.

TABLE I.—Weights and Gains.

No. OF LOT.	No. OF PIGS	Days fed.	Weight Oct. 9, '05.	Weight Jan. 29, '06	Total gain lbs.	Av. daily gain per head, lbs.
I.....	10	112	1,290	2,400	1,110	.99
II.....	10	112	1,275	3,250	1,975	1.76
III.....	10	112	1,310	2,630	1,320	1.18

TABLE II.—Financial Statement.

No. OF LOT.	Wt. at beginning.	Value at beginning, \$4.00 per cwt.	Wt. on Topeka market, lbs.	Selling price per cwt.	Proceeds on market, per lot.	Av. expense of marketing, per lot.	Total cost per lot.	Net profit per hog.
I.....	1,290	\$51 60	2,320	\$5 32½	\$123 54	\$3 50	\$103 16	\$2 04
II.....	1,275	51 00	3,143	5 40	169 72	3 50	134 59	3 51
III.....	1,310	52 40	2,525	5 35	135 08	3 50	110 48	2 46

TABLE III.—Feed-cost and Cost of Gains.

No. OF LOT.	Kind of feed.	Pounds fed.	Value of feed consumed.		Cost of gain per cwt.	Pounds of feed per 100 lbs. of gain.
			Per cwt.	Total.		
I.....	Corn-meal.....	7,690	\$0 62½	\$48 06	\$4 33	692.8
II.....	½ Corn-meal..... ½ Meat meal.....	7,848 1,552	62½ 2 00	\$49 05 31 04	4 05	397.3 78.5
Total.....	.....	.....		\$80 09		
III.....	½ Corn-meal..... ½ Alfalfa hay.....	7,875 1,340	62½ 40	\$49 22 5 36	4 13	596.5 101.5
Total.....	.....	.....		\$54 58		

The value received per bushel for corn marketed via the pork route is an excellent method of calculating the profit from feeding. In the case of Lot I, figuring the cost of the pigs at the beginning of the experiment at 4 cents per pound, we have the difference between \$51.60 and \$123.54, or \$71.94, to credit to the 13.73 bushels of corn which each pig consumed, returning a value of 52 cents

per bushel for the corn. With Lot II, after deducting from the \$169.72 received for the hogs at the market, the cost at 4 cents, or \$51, and the cost of the meat meal fed, we have \$87.68 to credit to the 14 bushels of corn which each pig consumed, or a value of $62\frac{1}{2}$ cents per bushel. With Lot III we have left \$77.32 to credit to the 14.06 bushels of corn consumed per pig, after deducting \$52.40, the original cost of the ten pigs, and \$5.36, the cost of the hay consumed. This gives a value of 55 cents per bushel for the corn fed. This shows that 20 per cent is added to the value of corn by feeding meat-meal at \$2 per cwt. as a supplementary feed, and 5.8 per cent added to the value of the corn by alfalfa hay at \$8 per ton.

These hogs were shipped direct to the Chas. Wolff packing-house, Topeka, Kan., and slaughter tests were obtained of the different lots. The government inspector, Dr. De Wolf, pronounced the whole bunch as unusually healthy. The lymphatic glands were large and soft, and only one case of parasitic infection of the liver was found. All had more leaf-lard than the average hog sold on the market. The amounts for the different lots were as follows: Lot I, 90 pounds; Lot II, 94 pounds; Lot III, 90 pounds. Although Lot II seemed much fatter and heavier on foot, the leaf-lard was but slightly greater. The superintendent of the packing-house, Mr. J. B. Nicholson, stated that the flesh of Lot II seemed firmer than the others in the warm condition. The hogs receiving alfalfa hay showed very fine carcasses.

The results of this experiment serve to emphasize the importance of converting the raw material of the farm into a more finished product in order to secure higher prices on the market, and also to retain a much higher per cent of the fertilizing value of the grain. For this purpose no farm animal is better fitted than the well-bred, thrifty hog when fed and cared for in a rational manner.

R. J. KINZER.

G. C. WHEELER.

The following is the revised baseball schedule: Games on home field—St. Paul Association League, April 2; University of Nebraska, April 11; Washburn, April 14; College of Emporia, April 17; Ottawa University, April 27; Baker University, May 1; Kansas State Normal, May 5; Fairmount College, May 10; University of Kansas, May 21; Friends University, May 26; Haskell Indians, June 4. Games away from home—Haskell Indians, April 28; Baker University, April 24; Kansas University, April 25; Kansas State Normal, May 7; Washburn, May 8. Season tickets are on sale at \$1.50 including all games except the St. Paul Association.

Regarding Balanced Rations.

BELOIT, KAN., February 26, 1906.

Director Kansas Experiment Station, Manhattan, Kan.

DEAR SIR: Will you please give me the cheapest balanced ration for dairy cows from the following feeds and prices:

Corn, shelled.....	\$ 0.36 per bu.
Kafir-corn, seed.....	0.60 per bu.
Oats.....	0.35 per bu.
Bran.....	17.50 per ton.
Oil-meal.....	2.25 per cwt.
Alfalfa hay	7.00 per ton.
Kafir-corn fodder.....	3.50 per ton.

Please send me bulletin No. 115, and put my name on your regular mailing list and oblige. Very truly yours,

W. H. MEARS.

Yours of the 26th at hand. From the price of the feeds given, the values per pound are easily calculated and found to be:

Corn .....	.640 cents.
Kafir-corn seed.....	1.070 cents.
Oats.....	1.100 cents.
Bran.....	.875 cents.
Oil-meal.....	2.250 cents.
Alfalfa.....	.350 cents.
Kafir-corn stover.....	.175 cents.

As Kafir-corn grain and corn are about equal in feeding value, with the advantage in favor of corn, we may at once cut out the former as too expensive at 60 cents per bushel. Kafir-corn fodder is your cheapest feed, but it is not at all adapted to milk production unless balanced by some highly nitrogenous feed. We cannot see at a glance whether or not it will be economical to use it when so balanced. I am sending you a copy of bulletin No. 115, and in table IV, beginning on page 130, you will find about 2700 balanced mixtures ready calculated for various purposes in feeding. Pages 128-9 give an explanation of the table, and from the data which it contains you should be able to calculate for yourself what rations would be cheapest. However, to assist you I will calculate the cost of a few.

Let us begin with corn and alfalfa; that will certainly be a combination hard to beat for economy and efficiency. You do not say how much milk your cows are giving, but if we assume a nutritive ratio of 1:6 for their ration we shall not be far wrong. That would be right for cows giving about sixteen pounds of milk per day. Turning to page 144 of the bulletin, we find under nutritive ratio 1:6 that corn and alfalfa must be used in the ratio of 30.8 of the former to 45.6 of the latter. If we add these two quantities together and divide each by the sum it will give us the

quantities of each to be taken for *one pound* of the ration. Thus: $30.8 + 45.6 = 76.4$; $30.8 \div 76.4 = 0.4$, and $45.6 \div 76.4 = 0.6$. Hence four-tenths of a pound of corn with six-tenths of a pound of alfalfa hay will give one pound of a ration with the nutritive ratio 1:6. From this you can easily calculate how much of each to weigh off for large amounts.

For each thousand pounds weight of herd you will need about 27.5 pounds per day in the ration. If in each pound there are four-tenths of a pound of corn there will be $0.4 \times 27.5 = 11$ pounds of corn in 27.5 pounds of the daily ration, and $0.6 \times 27.5 = 16.5$ pounds of alfalfa. This you notice is a very good ratio between the grain and the roughage. The cost would be: $11 \times 0.64 = 7.1$ cents for the corn, and $16.5 \times 0.35 = 5.8$ cents for the alfalfa hay; total, 12.9 cents per day, per thousand pounds weight of herd.

In a similar manner, by making the calculations for other possible combinations of the feeds you name we obtain the results exhibited in the following table:

Amount and cost of feeds balanced to a nutritive ratio of 1:6 and in quantities to make 11 pounds of concentrate and 16.5 pounds of roughage.

No.	Balanced feeds.	Pounds of each feed.	Total pounds.	Cost of each feed.	Total cost of weight stated.
1.....	{ Corn..... { Alfalfa.....	11.0 { 16.5 {	27.5	{ 7.1 { 5.8 {	12.9
2.....	{ Corn..... { Oil meal.....	8.6 { 2.4 {	11.0	{ 5.5 { 5.4 {	10.9
3.....	{ Alfalfa..... { Kafir-corn stover....	9.7 { 6.8 {	16.5	{ 3.4 { 1.2 {	4.6
4.....	{ Corn..... { Bran.....	4.5 { 6.5 {	11.0	{ 2.9 { 5.7 {	8.6
5.....	{ Bran..... { Kafir-corn stover....	16.0 { 11.5 {	27.5	{ 14.0 { 2.0 {	16.0
6.....	{ Oil meal..... { Kafir-corn stover....	5.3 { 22.2 {	27.5	{ 11.9 { 3.9 {	15.8

In the above table I have balanced Kafir-corn stover, your cheapest roughage, with the only three feeds which you name that will do, and I have balanced corn, your cheapest concentrate, with the only three of your feeds that can be used. To facilitate the comparison I have calculated them all to 11 pounds of concentrate and 16½ pounds of roughage where possible, and to 27½ pounds where the ration contains both the concentrate and roughage. In ration 3 the Kafir-corn fodder is balanced by alfalfa and the roughage ration of 16½ pounds would cost but 4.6 cents. Either mixture 2 or 4 could be used with it as a grain ration. Eleven

pounds of the corn and oil-meal mixture would cost 10.9 cents, while the corn and bran mixture would cost but 8.6 cents. Adding together Nos. 3 and 4 you see that a ration consisting of 9.7 pounds of alfalfa, 6.8 pounds of Kafir-corn stover, $4\frac{1}{2}$ pounds of corn and $6\frac{1}{2}$ pounds of bran would cost 13.2 cents. It is therefore slightly dearer than the ration consisting of corn and alfalfa only. With this combination, however, you have the advantage of having the concentrate balanced within itself, and the roughage also balanced in the same way. If you wish to feed less or more concentrate than 11 pounds you can do so without disturbing the balancing of the ration in respect to protein and non-protein. This affords a convenient means of modifying the feed for individual animals. It is possible, too, that the greater variety afforded by this ration would give better results than the simpler one consisting of corn and alfalfa alone. You will readily see that Nos. 2 and 4 might be used as a part of the ration consisting mainly of No. 1.

No. 5 would be balanced, but has too much bran and too little stover for a practical feed; its cost, 16 cents, is almost the same as No. 6, which is scarcely practical either, requiring so large an amount of oil-meal. In any case Nos. 5 and 6 are cut out by their higher prices, though the two added together would make a double ration which would be about right in the relative amounts of concentrates and roughage. Reducing it to the same basis as the others, it would consist of 8 pounds of bran, 2.65 pounds of oil-meal, and 16.8 pounds of Kafir-corn stover.

I cannot often give time to make such detailed calculations as the above, but in this case the question was so clear-cut, and the feeds so practical, that it seemed to have more than ordinary interest. I should say in respect to the oats that they are in themselves practically a balanced ration for your cows, but at 35 cents a bushel are considerably more costly than the rations we have been considering. If you wish to use some for variety you could replace part of the other ration by them. Yours truly,

J. T. WILLARD.

The Library has added about 1500 bound volumes to its inventory during the present College year. This does not include the hundreds of pamphlets that are received every month. There are kept on file in the reading room about a dozen dailies, nearly 600 weeklies and over 100 magazines. The number of students consulting books and periodicals every day is estimated at over 300, and during the noon hour there are frequently over 150 readers present.

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Local Notes.

Contractor Walter Stingley has resumed work on the new Horticultural Hall.

The oiled road in front of the College campus is doing fine this spring. It is dry, smooth, and dustless.

A special train will be provided Sunday, April 8, for those desiring to attend the "Messiah" at Lindsborg.

Professor McKeever lectured before the Geary County Teachers' Association in Junction City, March 17.

Professor Kammeyer went to Topeka last Saturday to act as judge in the second annual Washburn-Baker debate.

Next Tuesday Manhattan will vote \$12,000 for a new annex to the high-school building. There is no opposition to the bonds, and they will undoubtedly be voted.

Chas. Hughes, formerly private secretary to President Nichols, who left here last spring to take up the study of law in Kansas City, has passed the examination and been admitted to the bar.—*Students' Herald*.

The first of a series of cross-country runs, of spring term, starts from the City Park Saturday afternoon at 3:30. As the INDUSTRIALIST is passing through the press at that hour we can not report the winning parties.

Professors Kammeyer and Valley went to Chapman March 31 to assist in the Dickinson county oratorical contest. Kammeyer will be one of the judges and Valley will intersperse the orations with some of his best bass solos.

The friends of D. L. Timbers, '94, would have been interested could they have seen the smile on his face recently, all because of a new girl at his house. Mr. Timbers enjoys a good business in the corner grocery, Osborne, Kan.

Secretary Lorena Clemons is sending out postal-cards to all graduates of the College for information regarding their location and occupation. Efforts are being made to make the forthcoming catalogue as nearly correct as possible in this respect.

The Y. M. C. A. elected the following officers last week: President, A. D. Holloway; first vice-president, C. E. Whipple; second vice-president, J. E. Brock; secretary, R. W. Hull; board of trustees—E. C. Farrar, A. D. Holloway, J. R. Garver, Professors Ten Eyck, Eyer and Hamilton, S. J. Pratt, C. Ewing, and Dr. G. A. Crise.

The Library has lately added to its books of reference two new Webster's International and two new Standard dictionaries. Some of the old copies had been in use for many years and were completely worn out. A full dozen dictionaries are in constant use on the library tables and at least one copy in every department.

A "double header" basket-ball game was played last Thursday evening, in Commercial Club Hall, for the benefit of the courthouse clock fund, the first between the sophomores and freshmen, resulting in a score of 6 to 5 in favor of the former, and the second game between the College team and Ahearn's picked team. The last game was "good ball," and Ahearn's team won by a score of 39 to 34.

Efforts are being made to make the dedication on April 26 of the new Odd Fellows Home at Eureka Lake, near Manhattan (the former Dewey lake resort), a grand gathering of Odd Fellows from all over the West. Special trains will be run from many parts of the State and extensive preparations are being made at the Home to receive and feed all that may come. April 26 will be the eighty-seventh anniversary of the introduction of Odd Fellowship in the United States, and the celebration at Eureka Lake is expected to be the largest gathering of Odd Fellows ever held west of the Mississippi.

The Choral Union concert week before last was a financial as well as a musical success. Professor Valley gives us the following statement concerning the disbursement of the receipts, the total of which amounted to \$453.50.

Advertisements	\$ 37 18
Heat and light.....	2 00
Outside talent.....	30 00
Banquet	42 10
Programs.....	9 75
Decorations.....	13 41
Incidentals.....	1 50
Y. M. C. A.....	100 00
Y. W. C. A.....	100 00
Choral Union.....	100 00
Reserve fund.....	17 56
Total	\$ 453 50

Professor Dickens returned Sunday from a trip over the State in connection with College work. He says that there is a widespread interest in the oil-road experiments, especially in communities having very sandy roads. Some counties have several thousand dollars to invest in oil roads, and all they want to know is that the road is a success and how to do it. The Hutchinson experiment has shown that excellent results are obtained where sandy roads are treated with oil, and it now seems probable that there will be several hundred miles of oil road in the State before the summer is over. Professor Dickens brought home a sample of a sand road, which was treated with oil in 1901. It looks a good deal like a piece of sandstone rock.—*Manhattan Republic*.

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College year begins September 20, 1906. Examination for ad-
mission, September 19, at 9 a.m.

Catalogue or other information free, address

E. R. Nichols, President
Manhattan, -- Kansas

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Historical Society

Vol. 32

No. 28

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Manhattan



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	Janitor

THE INDUSTRIALIST.

VOL. 32.

MANHATTAN, KAN., APRIL 7, 1906.

No. 28

Spraying Fruit Trees.

ANY means of improving the grade of the fruit crops of Kansas is of vital interest to the Kansas grower in particular, and to the fruit-eating people in general. The value of every fruit crop produced in Kansas in recent years has been considerably lessened on account of the low grade of a large proportion of the crop.

In many cases a large part of the crop has been a loss because of premature dropping. It needs no expert accountant to show that with prime fruit selling at good prices, and low-grade stuff hardly paying the pickers, the growers are suffering losses out of all proportion to the cost of any means that may be used to prevent the fruit from being so damaged that it fails to make grade.

The establishment of cold-storage warehouses, the widening of the markets in this and other countries and the general increase in the consumption of fruit have allayed the fears of over production expressed a dozen or more years ago, when Kansas was setting so many large orchards. The world needs all the apples Kansas can raise, and Kansas needs the price of the fruit.

Some of the questions concerned in the unfruitfulness of some orchards are not yet fully understood and will require further experimenting to determine, but means of protecting growing crops of fruit from injury by insects and fungi have proved sufficiently uniform in results to allow statements concerning them to be made.

In recent years the Horticultural Department of the Kansas Experiment Station has done a considerable amount of work in testing methods of preventing injury by insects and fungi. Tests made in a small way by the entomologist have been attempted in a sufficiently large way to justify their recommendation for growers of large and small areas of fruit crops.

The importance of maintaining sanitary conditions is often underestimated. We have found less difficulty in producing a good grade of fruit in orchards that have received thorough and frequent cultivation. The details of the methods used by the Ex-

periment Station and the results accomplished were noted in Bulletin 106, in 1902, and wider experience and observation since that date have strengthened the opinion then expressed.

The cumulative effects of spraying have been much more noticeable in the fight against canker-worm than in that with codling-moth probably because the former insect does not migrate so readily from one locality to another. The appearance of the canker-worm is always periodic, but in the years since the Experiment Station orchards have been under treatment there have been a number of years when orchards in general and neighboring orchards in particular have been seriously defoliated, while the Experiment Station orchard has never suffered more than very slightly from the canker-worm. In recent years the orchard has not been sprayed specially for the canker-worm; it is believed that the thorough spraying used for codling-moth, combined with the cultural methods, have kept the canker-worm in check. The apple leaf skeletonizer, the leaf crumpler and the buffalo treehopper have caused no injury, while in unsprayed and uncultivated orchards some serious injury has been occasioned.

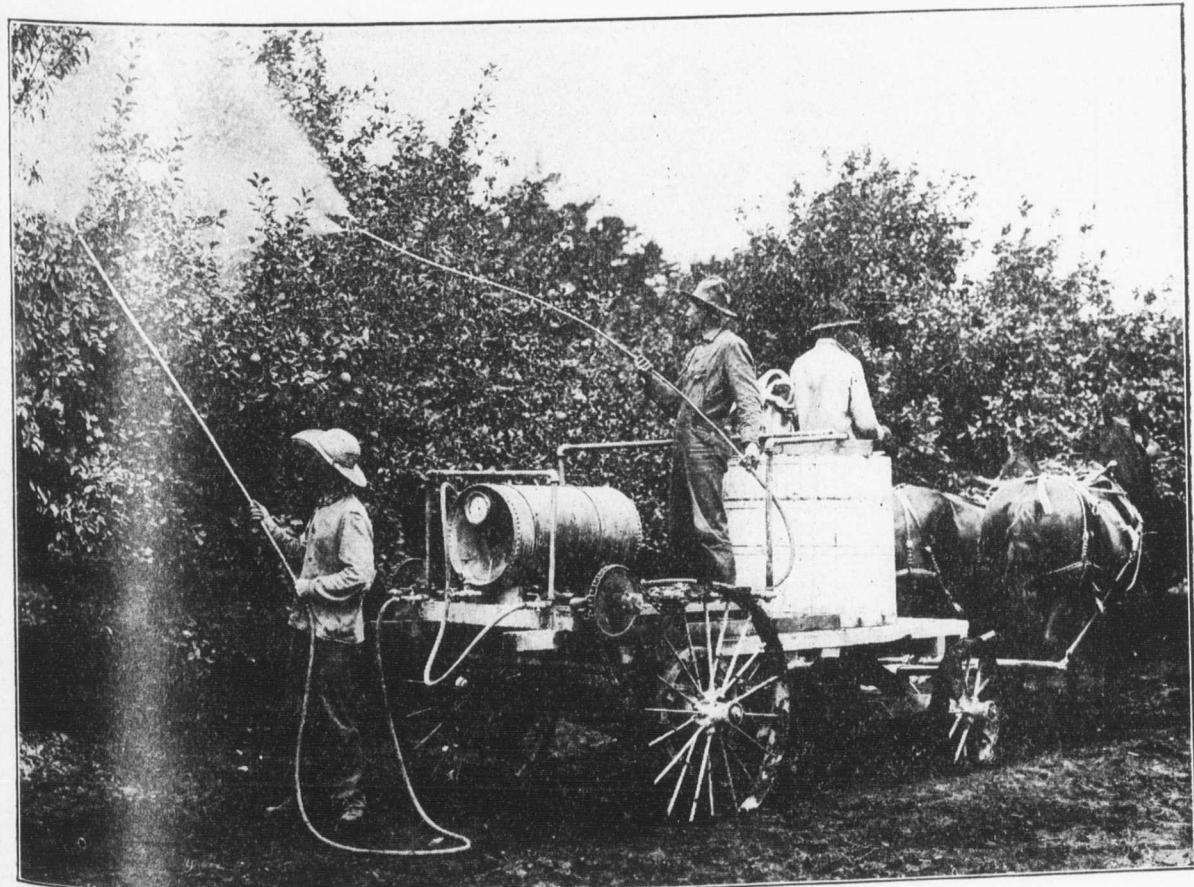
In the fight against codling-moth, it is at this date impossible to determine the exact value of the two factors, sanitation and spraying, but in every case under test or observation the combination has been more generally and certainly successful than has either alone.

There is always an element of chance in spray work. During the seasons of 1903 and 1904, the frequent heavy rains and continued cloudy weather made spraying uncertain and expensive. Even the best mixtures are not adhesive and effective if rain falls before the spray has dried upon the leaves. Such conditions demand much more frequent applications. If a heavy rain falls the night after spraying, but little of the spray mixture could be noticed by the observer or detected by analysis. The spraying should be repeated. Even in seasons so unfavorable as these the improved grade of fruit secured made the work highly profitable, especially with regard to injury by bitter rot and scab.

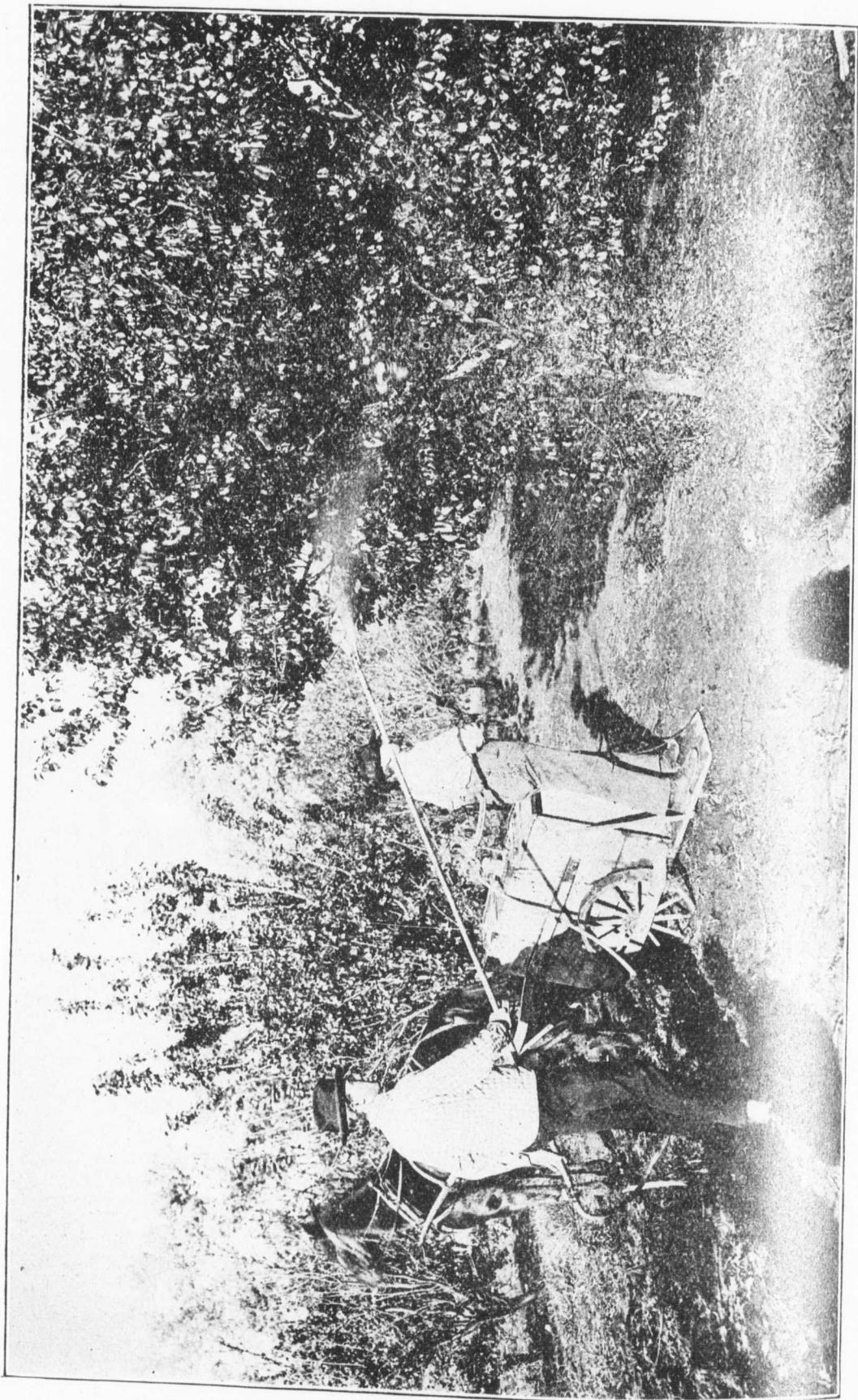
In 1905 conditions were much more favorable, rains were less frequent, and good drying weather succeeded most of the work. The Experiment Station orchard is a variety orchard, and as some of the early varieties are out of bloom and ready for spraying before such late bloomers, as Ralls Janet, or Genitan, are out of bloom, the first spraying was slightly more expensive in time than later ones, when the orchard was all sprayed at once. The second spray was given in June, after the dropping of the apples injured



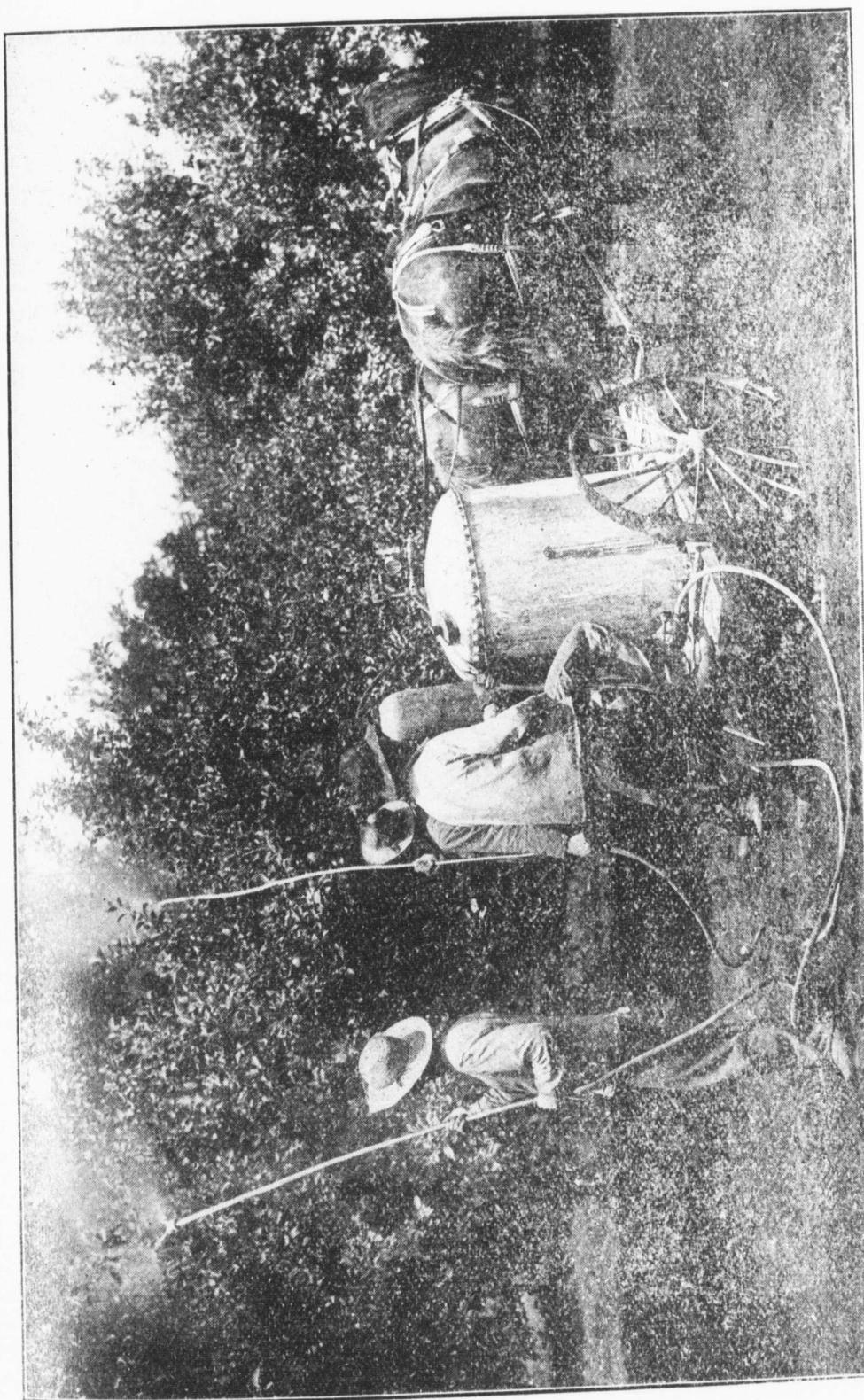
A Power Sprayer Operated by Gasoline Engine.



A Power Sprayer Operated by Geared Wagon Wheels.



A Handy Sprayer for Small Orchards.



A Sprayer Operated by Compressed Carbonic Acid Gas.

by those of the first brood that escaped the spray. Evidence of the second spray was noticeable July 15, and only late varieties were given a third spray at this time.

The grade of the fruit was very fair. The different varieties showed differing results, but from forty to seventy-five per cent graded No. 1. In an orchard sprayed for a commercial grower who paid the cost of labor and materials, especially favorable conditions were present. The spraying was done a little late. The fruit was all well formed but most of the little apples were "blossom end up" and the calyx leaves well spread. Fine drying weather succeeded. The spray used was the best yet tested, the combination "Disparene and Bordeaux."

So well did this mixture adhere, owing in all probability to the weather conditions, that considerable quantities of the spray mixture was noted on the leaves and fruit as late as July 10, by the Station observers, and somewhat later by the owner of the orchard. But the one spray was given. The grade of the fruit was exceptionally fine. Most of the fruit was of the varieties Ben Davis, Missouri Pippin, and Winesap. The Ben Davis graded slightly more than fifty per cent No. 1; the Winesap and Missouri Pippin nearly seventy-five per cent No. 1; the combined pack of No. 1 and No. 2 apples was over ninety per cent of the pick. Few of the No. 2 apples were injured by codling-moth. Curculio injury was responsible for most of the No. 2 failing.

The foregoing results are not so detailed as the first reports made by the Experiment Station. Those results secured and published by the department when Prof. E. A. Popenoe was in charge of the combined work in entomology and horticulture were very exact. The dropped apples were inspected and counted. The work in recent years has been in the line of practical commercial work, based upon these results. The figures given are from fruit picked and sold, but careful estimates have been made where the exact measure from various causes, principally petty thieving, were not secured. In the notes taken on the commercial orchard the packers' figures are given.

The principal requisites for successful work in spraying are: Good machinery, pump, and power; good, reliable spray chemicals and careful, accurate work and intelligent perseverance—power, purity, prudence, and pluck. The requisites of a good pump are: simple and durable working parts of brass (iron corrodes quickly from the contact with the chemicals); easy connection with the power, and a reliable agitator, as a thorough stirring of the mixture is a principal requisite for successful work, as without it the

operator does not know when he is getting too much or too little of the mixture on his tree, a nozzle that reduces the liquid to a fine mist. The fine mist will cover the foliage and fruit more certainly and safely and economically than larger drops.

There are many good pumps. Any strong, powerful pump, well fitted to strong hose and good nozzles, will do good work if the power is applied.

The question of power is an important one. The small grower can get good results from a barrel and pump, mounted on a sled or cheap cart. He must have an agitator or mixer and plenty of muscle on the handle. It takes power to reduce the liquid to a fine spray. A gasoline engine furnishes good power. The one used by the Experiment Station is one and one-half horse-power. A more powerful engine would be better. Four nozzles is about the capacity of the one used. A gasoline engine is a very finely adjusted machine. The first season ours gave but little trouble, but the second and later seasons it was in the shop several days when time was more than ordinarily precious.

Gearing attached to the wagon wheels, working an air compressor, is a cheaper machine. The important points are the packing of the valves and the adjustment of the gears. Any man who can run a mower and pack a pump can handle one of these machines efficiently. From sixty to eighty pounds pressure was necessary for efficient work; from eighty to one hundred pounds was better. In making the start a drive of seven hundred feet developed twenty-five pounds; two hundred fifty feet further were required to bring it to one hundred. With twelve-year-old trees of good size, set thirty-three feet apart, the drive from one tree to the next was sufficient to develop power for the spraying of two trees. With trees twenty-five years old, large and well grown and full of foliage, it was necessary to go twice in a row, spraying alternate trees each time.

In our experience with compressed gas for power we have secured very satisfactory results. One pound of carbonic acid gas has furnished the power to apply from ten to fifteen gallons of spray mixture. This power in 1905 cost six cents per pound, plus the freight from Kansas City. Three men and a team were required to operate it; two leads of hose, each equipped with four nozzles, gave a very fine and entirely satisfactory spray. The machine used by the College was mounted on two wheels, and the men who handled the spray rods were required to walk. This was satisfactory when working with grapes, small fruit, and small trees. For larger trees a four-wheel truck with a larger tank

would be advisable. This is perhaps the simplest form of spray machinery, but must be especially well constructed, as any leak is very troublesome.

For very large orchards some growers are using an outfit consisting of an air compressor operated by an engine, a storage tank for the compressed air, and tanks mounted on two or four wheels as best suited to the character of the ground and the size and kind of plant to be sprayed. The air compressor is located at a central point and the spray tanks filled there and operated in the field. A number of tanks are usually used, a boy driving the empty to the central tank and returning with the filled tank.

In recent years a number of mixtures have been under test, and the mixture used most recently has been a combination of Bordeaux mixture and arsenate of lead. A commercial preparation of the arsenate of lead known as Disparene was used very satisfactorily in 1904 and 1905. This combination has adhered longer to the foliage and fruit than has the combination of Bordeaux mixture and Paris green. Paris green is somewhat cheaper, but it is our opinion that the arsenate of lead is worth much more than the difference in the cost.

The amount of material to be used during the season, using a certain formula, depends upon the size and number of plants sprayed, the number of times sprayed, and the waste of material in application. Obviously, a large plant will require more material than will a smaller one, providing they were both sprayed under like conditions. In an apple orchard containing fifty to eighty trees it may require one hundred to two hundred or more gallons, while for an acre of potatoes containing several thousand plants, sixty to one hundred or more gallons will be sufficient. With a near approach to accuracy it is safe to assume that a well-developed fifteen-year-old apple-tree in leaf can be sprayed thoroughly with two gallons. The same tree in winter condition will require much less. At this Station during the spring of 1905 over thirteen hundred such trees were sprayed after blooming. The average quantity used was one and three-quarter gallons per tree. The first spraying of the College experimental orchard, fifteen years old, took two and a half gallons per tree, and the second spraying eight-tenths of a gallon. In the experimental vineyard of about six hundred vines, three hundred fifty gallons, or approximately 0.6 gallons per vine, were used.

Taking into consideration these three factors—the cost of the material used, the amount required per tree, and the cost of labor in applying—we can readily estimate the cost of spraying an

orchard of a certain number of trees. Our own experience has shown that our normal sized apple-trees can be sprayed with Bordeaux mixture and Paris green, or Disparene, for from four to six cents per tree, the expense of making and applying fifty gallons normal Bordeaux mixture being distributed much like this:

	Cents.	Cents.
Copper sulphate, 6 pounds	42.0	42.0
Lime, 4 pounds.....	2.4	2.4
Water, 50 gallons.....	0.0	0.0
Paris green, 6 to 8 ounces.....	8.0	...
Disparene, 3 pounds.....	....	45.0
	52.4	89.4

Applying two gallons per tree, the cost would be 2.1 or 3.6 cents, according to mixture used. The cost of application, spraying at the rate of three hundred trees per day, would be about two and a half cents per tree. The final cost would be from four and a half to six cents per tree. If only four pounds of copper sulphate is used instead of six, as is often done, the cost will be slightly reduced. On the other hand, if there be carelessness in application, resulting in waste of material or time, the cost may be greatly increased.

Disparene has been the most effective and most durable insecticide. The combination of Bordeaux and Disparene has given good results in preventing loss from diseases and insects.

There are many good spray pumps. All need careful handling. All working parts should be of brass. Every pump should have a good agitator. The pump should reduce the mixture to a fine mist.

Where there is reason to fear serious damage from scab and bitter rot, an application of Bordeaux mixture about August first is advised. The Experiment Station orchard has been almost entirely free from these diseases, and the August spraying has not been required.

The plum and peach orchards of the Experiment Station have been sprayed to prevent fungous diseases. It has been found that peach trees and the Japanese varieties of plums are much more easily injured by spray mixtures than are apple-trees and the European and native varieties of plums. Any spray mixture should be reduced to one-half strength before applying to peach and Japanese plums. Leaf curl has been prevented to a great degree by frequent applications of Bordeaux, but a spray before the buds swell is essential to its best control.

The spraying of the vineyard has become as regular a part of the growing of grapes at the Experiment Station as the pruning

and cultivation. Good grapes are sometimes grown without spraying, but the diseases are so certainly controlled by the use of Bordeaux mixture and the cost is so small that it is very poor policy to neglect spraying. This is particularly true in regard to the hybrid varieties, which produce the best quality of fruit. Such varieties as Goethe, Agawam, Jefferson and Lindley have usually failed to produce fruit unless faithfully sprayed. Delaware, Brighton, and Brilliant have been but slightly more resistant, and even such hardy sorts as Concord, Worden and Elvira have given large profits for spraying.

The fruit grower cannot expect to receive the greatest good that may be secured by spraying for a single season, but the fight against insects and fungous diseases must be continued year after year. The only argument that should be needed to convince the grower that spraying is a necessary part of fruit-growing is, that it pays. Even when done in an experimental way, keeping careful record of everything, spraying has given good returns. There are many practical growers who have adopted methods of spraying suited to the size of their plantations, and it is rare that a grower discontinues the work when once it is thoroughly carried out for one or more seasons.

ALBERT DICKENS.
ROBT. E. EASTMAN.

March Weather Report.

March, 1906, produced climatic conditions rarely seen in Kansas. The amount of snowfall was unusually large, as was also the per cent of cloudy weather.

The month's mean temperature was lower than that of the three preceding months, and the records show only the year 1867 to have had a lower mean monthly temperature. The mean maximum temperature for the month was 41.7° , while for the past 47 years it was 53.2° . The mean minimum temperature was 23.1, the past average being 28.9° . The mean temperature for the month was 32.4° , which was 8.7° below normal. Highest temperature for the month was 70, on the 1st; lowest 2° , on the 17th.

Rain or snow fell in measurable quantities on ten days, amounting to 2.12 inches, being .69 inches above the normal. The snowfall was 9 inches, or 6 inches more than usually comes in March.

The general direction of the wind was N. W., with an unusual number of easterly winds. The run of wind was 8604, or 236 miles more than the average run.

There were 11 clear, 3 partly clear, and 17 cloudy days, the per cent of cloudiness being exceeded in March, 1867, by 8 per cent. The mean barometer was 28.985 inches. The highest 29.36, on the 19th; the lowest 28.18, on the 1st.

The cold weather did but little damage to fruit, and peaches promise a good yield.

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Local Notes.

President and Mrs. Nichols entertained the Board of Regents and the members of the Faculty and their wives last evening.

The Farm Department has done a good deal of spring seeding the past two weeks. The oats, barley, emmer and grasses are all planted.

The Mechanical Engineering Department has lately completed a set of new lathes for the woodwork-shops. They were connected and put in operation this week.

The Board of Regents were in regular quarterly session this week, but as the meetings were still in progress at this writing we can not give a report of their work.

Professor Valley will take part in the rendition of Lahee's cantata, "The Building of the Ship," given by the Junction City High School Choral Society, April 17.

The next number of the College lecture course will be a concert, both vocal and instrumental, by the Chicago Glee Club. They are billed to be here on Tuesday, April 17.

Professor Kinzer and Assistant Wheeler, of the Animal Husbandry Department, have issued Press Bulletin No. 149, giving a resumé of their work in experiments with swine feeding during the past year.

Assistant Theo. Scheffer, of the Department of Zoölogy, has prepared a laboratory manual in Zoölogy for high schools and introductory college courses. The book will be published shortly by the well-known publishers, P. Beakiston & Son, of Philadelphia.

The Poultry Division has received a donation of three sittings of R. I. Red eggs from Mr. A. D. Willems, of Inman, Kan. Mr. Willems won most of the premiums on that variety at the recent State show at Topeka, and wishes the Agricultural College to own some of the best. Who is next?

The first baseball game of the term came off at the arena last Monday and resulted in a defeat of our boys. The score stood 22:1 in favor of the St. Paul team. There will be better reports when the team has had more practice and the contestants will be amateurs instead of professionals.

Assistant C. W. Melick, of the Dairy Department, has made a strong effort informing Senator Long and the Kansas congressmen of the doings and practices of the oleomargarine trust, and the inevitable effect which the charges of the oleomargarine laws now asked for by the trust would have upon legitimate butter making.

In this number will be found the program of the next students recital given by the Music Department. The recital will be free for all visitors, and ought to be attended by all lovers of high-grade music in Manhattan and vicinity. Doors will be open at 7:30.

The City Library Association has secured Miss Flora Rose, assistant in the Domestic Science Department, to deliver a lecture on salads, with demonstrations. It will occur at Institute Hall, Saturday afternoon, April 14, at 3:00 o'clock. In the club room across the hall, under the management of Mrs. E. A. Wharton and Mrs. H. S. Roberts, will be held a food sale—same date. Chicken pie, baked beans and brown bread, cakes, doughnuts, etc.

The Agricultural College has arranged to hold a special series of farmers' institutes in Dickinson county next week. The subjects will be "Corn Breeding" and "The Farm Dairy." The itinerary is the following: Monday, April 9, Chapman; Tuesday, April 10, Abilene; Wednesday, April 11, Hope; Thursday, April 12, Gypsum; Thursday evening, Holland; Friday, April 13, Solomon. All the meetings, except the one in Holland, will be held from 1 o'clock to 4 o'clock in the afternoon.

A live-stock judging contest by students of several agricultural colleges will be a feature of this year's American Royal Live Stock Show, to be held in Kansas City, October 8 to 13. Prof. R. J. Kinzer of the Animal Husbandry Department of this College, told the directors at their meeting last Monday that he had received assurances from the colleges of Missouri, Kansas, Oklahoma, Texas and Colorado that they would send teams to participate in the contest. Each team will consist of five students. A trophy as a team prize and \$200 in cash for individual prizes will be given.

The Eighteenth Annual Report of the Experiment Station at the Kansas State Agricultural College, covering the work of the fiscal year 1904-'05, was received from the State bindery this week. It is a handsome volume of nearly five hundred pages, containing the report of the Board of Regents, the financial statement, a report of the Station council, a report on Station publications, reprints of Station Bulletins from No. 124 to 129, inclusive, and reprints of the press bulletins from No. 139 to 141, inclusive. The report shows that the Station is doing very effective work and that its financial condition is satisfactory.

The Y. M. C. A. building canvass still lacks about \$10,000 of the required amount. Three Topeka papers, the *Kansas Farmer*, the *Mail and Breeze*, and the *Farmers' Advocate*, have agreed to open their columns for subscriptions to the building. An effort will be made to raise this \$10,000 among the friends of the College throughout the State. The three papers head the list by subscriptions of \$100 each. The students of the different counties are being organized into groups, which will undertake to advertise the canvass and to interest people generally throughout the State. Many of the students have agreed to write personal letters to their friends and to their home papers.

Alumni and Former Students.

Edith Huntress has resigned her position as executive clerk in the Secretary's office.

Kate Robertson, '05, is teaching English and geometry in the high school at Coffeyville, Kan.

Helen C. True, '01, has changed her address from Vera, Kan., to 1409 Fillmore street, Topeka, Kan.

R. F. Bourne, '03, who recently obtained his degree as a veterinary surgeon at Kansas City, is located at Delphos, Kan.

Florence (Vail) Butterfield and H. F. Butterfield, both of the class of 1901, are happy in the birth of a son, April 4, who will be known as Vail Howard Butterfield.

Grace Allingham, '04, who has been teaching some classes and taking graduate work at College, has received an appointment as assistant matron at Haskell Institute, Lawrence, Kan., until there is an opening in the work for which she took the civil service examination recently.

Captain and Mrs. L. L. Durfee, Seventeenth Infantry, announce the engagement of their cousin, Louise Anna Adams, to Lieut. Roy W. Ashbrook, Seventeenth Infantry. The wedding will take place at Fort McPherson, Ga., April 18. Mr. Ashbrook was a second-year student in 1894-'95.

We have received, with the compliments of May Secrest, '92, Vol. I, No. 2, of the *Polytechnic Journal*. This is a paper published by the student body of the California Polytechnic School, San Luis Obispo. This number contains a very good portrait of Miss Secrest, who is in charge of the Domestic Science Department, and a very poor one of Miss Harriet Howell, formerly superintendent of Domestic Art here, and now uniting that work with other duties at the California institution.

Edith (Perkins) Myers, '00, with her husband, Fred Myers, senior in 1901, visited the College and friends in town this week while on their way to Marquette, Kan. After visiting there for a month they will go on to Pasadena, Cal., where Mrs. Myers' parents and sister still reside. Mrs. Myers made a special study of chemistry while a student and was much interested as well as surprised in the growth of the Chemical Department. Mr. Myers was more interested in the Electrical Engineering and Military Departments.

Raymond H. Pond, '98, professor of botany and pharmacognosy in Northwestern University, has an article in the *Popular Science Monthly* for March, on "How Rooting Aquatic Plants Influence the Nutrition of the Food Fishes of Our Great Lakes." Professor Pond shows that these plants are means of transferring mineral elements from the submerged soil to the water and its inhabitants. He has also published in the *Annals of Botany* for January an extended study of "The Incapacity of the Date Endosperm for Self-digestion.

Music Recital

THURSDAY, APRIL 12, 1906
College Auditorium
At 8 p. m.



1. Selection, - - - - - ORCHESTRA
2. Fruhlingsrauschen, - - - - - Sinding
BESSIE NICOLET
3. (a) Bendemeer's Stream, - - - - - Gatty
(b) Thou Art So Like a Flower, - - - - - Chadwick
PERCY M. ROBERTS
4. Polish Dance Op. 3, No. 1, - - - - - Scharwenka
IRENE INGRAHAM
5. Violin, - - - - - Cavatina, - - - - - Bohm
R. R. HAND
6. Last Hope, - - - - - Gottschalk
EDNA JONES
7. Postillion d' Armour, - - - - - Behr
KATE HUTCHINSON and ANNA TOLIN
8. (a) Pas de Amphores (Air de Ballet), Chaminade
(b) Morceau Characteristique, - - - - - Wollenhaupt
TILLIE HAROLD
9. Nightingale's Song, - - - - - Nevin
PEARLE HINKLE
10. Minuet, - - - - - Paderewski
GERTRUDE LILL
11. Pasquinade Caprice, - - - - - Gottschalk
GRACE WOOD
12. Damonen Tanz, - - - - - Eduard Holst
BESSIE NICOLET, ELSIE BROWN, EDNA JONES

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Historical Society

Vol. 32

No. 29

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Manhattan



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THE INDUSTRIALIST.

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MANHATTAN, KAN., APRIL 14, 1906.

No. 29

A Homesick Missourian.

The Circuit Rider on His Travels in Kansas—Clay, a Fine County That Not Long Ago Was in the Wild and Woolly West—A Visit to a Farmers' Institute.

From the Kansas City Star of April 2.

HAYS CITY, KAN., March 30.—The writer admits to having been through a severe attack of nostalgia, which is a scientific name for homesickness that sounds more like catarrhal trouble than a real description of the home pining. When a Missourian strikes counties with the names of Saline and Clay, corn-growing, stock-raising counties, though they have not yet risen to the proper appreciation of the mule, even those be Kansas counties, in name like and as to folks somewhat like, is it any wonder the power of suggestion brings a mighty feeling for one's own home?

There is a neat, well-kept town up in Clay county, Kansas, called Clay Center. I do not know when I have struck a prettier town or a better ordered community, and the county court house there—Clay Center is a county seat—is a model for a thriving, agricultural community. You feel like taking your hat off when you enter that court house and keeping your feet on the floor instead of on top of a desk or another chair. I found, too, that folks in Clay county coming into Clay Center were given to the caucus habit in the stores and where there were chairs and a fire, just as is our wont down in Missouri. It will not do to belittle a country caucus in the store, as many a politician has found to his disadvantage, and that influence more than anything else has brought about public house-cleanings long necessary. The spirit of it often lacks organization and proper direction, but when given the same the result is a Joseph Folk.

Don't it beat thunder, to indulge in a little divergence, that in this fenced-in land, where now there is no animal wilder than a rabbit, it comes to me I used to eat buffalo meat in Kansas City in 1870, killed here, shipped and cooked there and that people then thought the country through which the old Kansas Pacific railroad projected itself could never support it or justify its maintenance.

In that court house at Clay Center, however, I met up with a product of Kansas that seems to me to mean more of value than

all the increment of material progress, because it gave assurance not only of the present but of the future.

It was a snowy morning and I was one of a number to gather together in a court room to take part in the meeting of a farmers' institute. Just a plain meeting of countryfolk to discuss things and learn from the experience of the many something of value to the individual, people who are trying to devise ways and means whereby the land of the farms may be more productive in proportion to the demands of those who must eat and wear clothes, and by that increased production prevent serious deprivation to those who pay the price and consume. That is the true meaning of farmers' institutes.

There were talks made and papers read at that Clay Center meeting by young and old of both sexes. Trained scientists were there from the Faculty of the Kansas State Agricultural College—I am beginning to think a whole heap of that College—and men who had but little advantage in this life on the farm or anywhere else.

There was a young man who got up and read a short paper, the plain recital of his experience in fattening twenty-three steers for the market. His modesty, his common sense and what he had to say, and the way he said it, made a whole lot of us old fellows straighten up and give attention. I imagine most of us had fed stock, but the way that young fellow had selected his fatteners, the selection of the feed and the care, with the real kindness such as he feels for every dumb animal, appealed to every one of us. It is not justified here to tell of the details as he gave them; how he was careful to select his animals as to age and size; how he had a number for each one and a name, too, by which he called them; how he found too much corn was too heating and non-flesh producing; too much green alfalfa was sure to cause bloat. "I had four mighty bad cases of bloat; worst I ever saw," said he, and he recited how he found prevention in a balanced ration, where prairie hay once a week cured the evil effects of the bloating alfalfa. That young man was young; probably 24 or 25; he was clean, decent, firm on his feet, and when he told us he had cleared \$5 per head on his steers we applauded him just as though we were sharers, and liked him all the more because he said that while associating with those cattle he had grown so attached to each steer that it was a strain to have to sell them that made him sorter begrudge his profit.

That young man meant Kansas and the West more to me than anything I have seen. A friend sitting by me told me he was a product of the Kansas State Agricultural College. I do not know

much of such schools, but hear such is the finished product, and they turn out fit women down there at Manhattan to mate with them. So right then and there I determined to go to Manhattan and take in that school. I did. I saw 2000 students there, boys and girls, and never heard a single "Rah! Rah!" nor saw a single collar out of proportion to its neck. I am starting in to write of that school and its adjunct here at Hays with as much heart in it as anything to which I have ever put a pen. THE CIRCUIT RIDER.

At the Manhattan School.

A Visit to the Kansas State Agricultural College.—The Circuit Rider Sees the Farmers' Sons and Daughters at Study and at Work.—An Institution the State May be Proud Of.

From the Kansas City *Star* of April 3.

HAYS CITY, KAS., March 31.—There are some knotted kinks in the minds of many farmer folk that a single day's visit to such an institution as the Kansas State Agricultural College at Manhattan would unravel and straighten out. The farmer would see, as did this writer, that such a college is no "dude factory" and, call such farming as is taught there "book farming" or "scientific farming" as you will sarcastically, it is superior to anything learned in the narrow environment of a single farm, and as apt to make the learner return to the home farm, stay and prosper there as the latter, unaided, is pretty sure to make him leave and go elsewhere.

It would be hard to find a farmer that does not believe in some schooling for his girl or boy. As for the country boy, the average goes to a district school part of the year, and this is school experience. While he is of an age that allows of his being held down to it, after school and out of school he works on the farm of his father, and this is his farming experience. Suffice it to say, that as to school and farm this is a narrowing and narrow experience. The Agricultural College is the proper evolution from such beginnings. The student there goes to a school far better equipped with educational facilities than any country district or high school, and much more adapted to giving instruction that is the foundation for his life work. At the College, in addition to studies, the student learns and practices agriculture on a farm, it is safe to say, far better managed than his home farm—a farm, in short, that is the composite of thousands of the best managed farms in this country.

He learns many things at such a college advantageous and often vitally necessary on a farm of to-day that he would hardly acquire with thoroughness in his home environment. When such a collegian returns home you can put it down he will never take a saw to town or crossroads shop to get it sharpened. He knows how

himself and does it, saving time and money. If the singletree breaks, he makes a new one and welds the iron to it. If the horse gets sick, he knows what the trouble is, the proper remedy, and doctors that horse. If the bunch of feeding steers are not fattening as they should, he makes no blind experiments, but changes them to a proper food ration and care at once. When he has a business matter on hand, he does not have to trot to a lawyer's office for fear he may be swindled. The complicated market reports in the papers are not Greek to him, but plain understandable English.

One often hears of the tendency of the country boy to leave the farm and go to the city as soon as the paternal and maternal leading strings cease to hold him. I have been noticing the influence of agricultural colleges as affecting this very matter and been paying special attention to young men trained and educated there, where they are and what they are doing. One finds such alumni now all over Kansas, Missouri, and the West. I have never found one of these who considered the job of motorman on a street-car more dignified and fraught with greater possibilities than work on a farm. Of others I have found many who prefer a poor job in a city because they know nothing of it, and who have not properly learned to appreciate the farm. Your collegian has learned to know the one and appreciate the other. The best way I know to keep the boy on the farm is to send him for a short or long course, as may be possible, to a good agricultural college, as is the one at Manhattan. When he comes home he will know something of the real respectability and dignity of the oldest and worthiest occupation on earth, and in his broader knowledge be proud of work he had begun to think beneath him in his callous youth.

It is not my intention to give much of detail in writing of the Kansas State Agricultural College at Manhattan. Such would come more within the scope of a catalogue. In general the objects of the institution, like those in most of the states, is to give instruction in agriculture, the mechanic arts, the English language and the various branches of mathematical, physical, natural and economic sciences, with special reference to their applications in the industries of life.

The College buildings are substantial stone structures that stretch in an imposing front along the sky line of a ridge at the western limits of the town. It is a good mile walk from the business part of Manhattan, up an ascent that is easy because of the gentle slope and well-kept walks and roadways. All the students—there are 2000 of them—take this walk going and com-

ing each day, for none live within the College buildings, these being devoted exclusively to the direct educational and industrial training purposes.

A fine sight it is of a morning to see the long lines of youth coming along the tree-bordered walks of the handsome park that separates town from College. I took that walk but recently of a morning, trudging between two professors, and just behind us were three or four lads, snatches of whose talk I could hear. It was something about "a" and "b" relative to a certain "y" and "z," which relation could be established definitely into numerical resolvents by doing some calculation regarding a certain "x." There was fully a half-mile of this talk. I strained ears and brain to hear and comprehend, but the big entrance to the main building swallowed me up before I got the hang of the problem. It is strange, but these simple letters have much to do with life's affairs outside of their places in the alphabet. They did not seem to worry those farmer collegians like I remember they used to worry my schoolmates and myself thirty years ago.

It was my good fortune to be guided all over the many buildings, the farms and the grounds by President Nichols himself. It was the tour of a whole morning, and when noon came I rode back to town instead of walking. It was down hill back, but I had had enough of walking. That untiring, enthusiastic president took me through miles of College halls, over farms, meadows, orchards, vineyards and sample gardens, and through lots and barns where were horses, cows, steers, hogs, sheep, and poultry, and the stuff necessary for their keep. It was a fine and instructive showing, and I felt I had been somewhere and seen something.

Little things I saw and noted impressed me more than anything else with the spirit and efficiency of the institution. What room there is left here strikes me as best to fill with such. They were small matters connected with the industrial work more than those of the lecture and class rooms. Each of these, however, has its daily part in the programme for the student, and seemingly variation produces good results, for I never saw a lot of more earnest and interested collegians than those of both sexes I saw everywhere about the buildings and grounds. There were no extravagances in dress, and all were good-mannered, giving a pleasant "good morning" or a polite nod to the writer, without a single indication of the possible under the surface query: "I wonder who that queer, old guy with the whiskers is, anyway?"

Down about the lots and barns I saw young men in overalls attending to stock or being shown how. If there was any trace

other than pride in doing a most useful work I could not see it. What struck me was that all the animals were gentle, unshrinking from a hand stroke and placid in the proximity of man. Nothing speaks better for the one who handles the horse, the mule, the cow or their kind than this very thing. A moment's anger, the kick in the side or the unexpected and undeserved blow with whatever was at hand has ruined many a good animal. In sight or out of sight those who take care of the stock at the College at Manhattan can be trusted. The actions of the dumb brutes show this beyond question.

I went through a big building where numerous young men were busy with tools in woodwork or at forges and anvils working with iron. It is more than probable any one of those boys could go down on our farms in Missouri, replace and repair anything and do it in a shipshape, workmanlike manner.

But I saw one sight in those College walls that was as pretty and inspiring withal as ever comes to the eyes of a man. It was in Kedzie Hall, a building devoted to domestic science. In a big room there that I would call a whaling big and marvelously clean kitchen, I saw about fifty girls, each in a neat house-work dress and busy before a table whereon were utensils, a measure of flour, measures of breadmaking components. These girls were just starting in on the cookery hour. Everything was so clean and orderly and attractive that the sight fascinated me. It meant when daughter gets home after school term many a tired mother can rest a little. Do not think these girls were learning to become menial cooks. No, sir. Girls like that are not going to be anybody's menials. They are taught cookery and other domestic science branches to fit them as homemakers and women capable in any sphere of life.

In looking over the lists of names of hundreds of women graduates of this College since 1867 I find that following the names of those yet living are their present addresses and their avocations. By far the greater number of these names are followed by the simple designation, "Housewife." It is a proud title, so revered by every true and good man as is none other in this world.

THE CIRCUIT RIDER.

The Burlington (Iowa) *Gazette* of March 28 contains a lengthy write-up of a gymnastic exhibition in that city given by the girls of the Y. W. C. A., under the direction of Mrs. Lundgren, who will be remembered as our teacher of calisthenics five years ago—Miss Gertrude Williams.

Chemical Fertilizers for Wheat.

Few experiments have been made at this Station in using chemical fertilizers on wheat. Some experiments were made several years ago in manuring land for wheat, and tests have also been made in the use of salt and land plaster. On spring grains we have made some tests with phosphate, potash and nitrogen chemical fertilizers during the past two seasons.

With barley the phosphate and nitrogen fertilizers have given increased yields, but little increase in crop has resulted in using the fertilizers on the oats. As to whether it will pay to use chemical fertilizers on wheat depends largely upon the physical and chemical needs of the soil. Usually land which has been farmed to wheat for a long time is in a bad physical condition and needs a rotation of crops rather than the use of chemical fertilizers. The humus of the soil is probably largely exhausted, which causes a compact texture unfavorable to plant growth. By growing cow-peas or soy-beans as annual crops, or alfalfa, clover, and grasses as perennial crops, the supply of humus and nitrogen in such land may be increased and the physical condition improved. Also, lands kept continually in wheat become foul with weeds and infected with the diseases which injure wheat. By growing corn and other cultivated crops and giving thorough tillage and cultivation the land will be much benefitted, resulting in larger crops of wheat and a better quality of grain after the rotation with corn, legumes, and grasses.

It is impossible to advise what chemical fertilizers to use on any land, since this can only be determined by actual test. On the upland soil of the Station farm phosphate and nitrogen fertilizers have given better results with grain than potash fertilizers. Kansas soils are not usually apt to be deficient in potash.

For information regarding the testing and use of fertilizers, I refer you to No. 90, Vol. XXIII, Report of the Kansas State Board of Agriculture for the Quarter ending June, 1904. This publication also gives the addresses of the fertilizer companies licensed to sell fertilizers in this State, with a list of the brands and composition of the fertilizers sold.

There will be no injurious effect on the soil by applying chemical fertilizers in reasonable quantities. It is possible to injure the land by applying lime, land plaster or salt too liberally. These substances are really not fertilizers in the sense that potash, phosphoric acid and nitrogen are fertilizers; rather they are stimulants or indirect fertilizers, since their action on the soil is to liberate the plant-food already contained there. Also, in some

cases they improve the soil texture, but their continued use results in exhausting the fertility of the soil. Old lands which have become acid are often benefitted by a light application of lime or land plaster, but this should not be repeated often.

If land is in poor tilth and exhausted in fertility, better discontinue the growing of wheat upon it, rotating with crops mentioned above, adding fertilizers such as phosphates, potash, lime and land plaster to the grasses and legume crops rather than to wheat. In this way the soil fertility may actually be increased, and at the same time larger crops of grass, alfalfa or clover may be harvested.

A. M. TEN EYCK.

Disking and Fertilizing Alfalfa.

Apply 15 to 20 loads of good barn-yard manure per acre during the winter and early spring, disk as soon as the soil is in fit condition, in order to cultivate the land and mix the manure with the surface soil.

Alfalfa responds very quickly to surface dressing with manure. It is not advisable to keep land in alfalfa too long; better seed down other land and break the old fields, planting again to corn and other grain crops. Alfalfa is a very heavy feeder on the mineral elements of plant-food—potash, phosphoric acid, and lime. And it is possible that in eight or ten years' cropping with alfalfa the available supply of these elements may become inadequate to supply so gross a feeder as the alfalfa crop is. However, the alfalfa has doubtless added nitrogen and humus to the soil and this land, when broken and planted to corn and other grain crops, will prove very productive.

Probably the application of lime or potash fertilizers would have a beneficial effect, but if you have the barn-yard manure I think that will be the cheapest and most profitable fertilizer which you can use.

Disking alone, without the application of manure, will give good results, but the disk with the dressing of manure should give a much greater increase in the alfalfa crop than the simple disking. In disking alfalfa it is best to set the disks rather straight and weight the harrow. In this way the soil is not ridged and the disks are not so apt to cut off the crowns of the alfalfa plants as may be the case when the disks are set very slanting. I believe that all disk harrows will ridge the ground more or less by one disk, but when the disks are set sloping for deep cultivation, if the harrow is lapped one-half the ridge formed by the first cultivation is thrown back by the second cultivation and the ground is

left practically level. In preparing a seed-bed with a disk harrow I always prefer to lap one-half rather than to cross-disk. But in disking alfalfa I prefer to cross-disk, following with the common harrow, in order to complete the soil mulch and leave the land level for mowing. With the disks set fairly straight and the harrow weighted as described above, there will be little ridging of the land in crossing-disking alfalfa.

A. M. TEN EYCK.

Gold Medal for Grain Exhibit.

The Experiment Station has recently received a gold medal awarded by the Louisiana Purchase Exposition for the exhibit of grains prepared by Professor Ten Eyck. The medal is now in the Agricultural Department. It is technically described as follows:

In the composition of the obverse of the medal are shown two figures, one of which, Columbia, tall and stately, is about to envelop the youthful maiden by her side, typifying the Louisiana territory, in the flag of the stars and stripes, thus receiving her into the sisterhood of States. The other figure is depicted in the act of divesting herself of the cloak of France, symbolized in the emblem of Napoleon, the busy bee, embroidered thereon. In the background is shown the rising sun, the dawn of a new era of progress to the nation.

The reverse of the medal shows an architectural tablet bearing an inscription giving the grade of the medal. Below the tablet are two dolphins symbolizing our eastern and western boundaries, the whole surmounted by an American Eagle, spreading his wings from Ocean to Ocean.

On the gold medal there are three distinct corners, each containing a wreath encircling a monogram or emblem, and each of these wreaths is surrounded by fourteen stars, representing the Louisiana Purchase states and territories. On the grand prize design there is the same number of stars in the upper field of the shield, and there are thirteen bars in the lower field, representing the original states. On the design of the silver medal the artist has used the cross of the Order of Saint Louis.

The medal was designed by Adolph A. Weinman. The design was approved by a committee composed of J. Q. A. Ward, Daniel C. French, and Augustus St. Gaudens.

The dies were engraved and the medals struck by the United States government mint at Philadelphia. The alloy for the medals was made especially for the Exposition, after samples were submitted and passed upon by expert medalists.

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Local Notes.

Prof. F. S. Schoenleber has moved into N. Ballard's residence, on the corner of Fifth and Houston streets.

Assistant Scheffer, of the Department of Entomology, will conduct an experiment in school gardening with pupils selected from the city schools.

There will be a game of baseball on the 17th between our team and the College of Emporia.

The town papers say that Miss Alice Rupp, who is away in Indiana on a year's leave of absence, is soon to be married.

Professor Walters lectured last Saturday afternoon before the College Farmers' Club, on "Agriculture in Central Europe."

The College nine were badly beaten last Wednesday afternoon in the Athletic Park by the Nebraska University team. The score stood 9 to 0.

Professor McKeever has completed his plans for his new residence in "Faculty Row," and expects to begin building operations early in May.

For the seventy-seventh time in thirty-three years the INDUSTRIALIST rises and remarks that Vattier street ought to have a sidewalk from the College gate to Second street.

Superintendent Rickman has purchased the Knipe home, lately known as the Judge Story place, on Ninth and Humboldt streets, and has moved into it. We congratulate the Superintendent.

President Nichols has been authorized by the Board of Regents to correspond with the United States War Department concerning the immediate exchange of the old Springfield rifles for new United States magazine rifles.

The Printing Department has just finished a 100,000 run on Bulletin No. 133, by the Botanical Department. The bulletin is on "Alfalfa Seed: Its Adulterants, Substitutes, and Impurities, and their Detection." The bulletin contains about forty very fine half-tone illustrations of seeds and adulterants.

The Board of Regents at their recent meeting allowed Assistant W. Anderson a year's leave of absence. Mr. Anderson intends to go East and take an advanced course in Physics at some great university. His position in the Physics Department will be filled by Asst. O. H. Halstead, of the Department of Mathematics.

Professor Brink will serve as one of the judges on thought and composition in an oratorical contest between several county high schools, to be held at Harper, April 28. Doctor Brink is often called upon for such services.

The recital of the Music Department last Thursday night was a grand success. The program was interesting and well rendered and the Auditorium was well filled with an appreciative audience, though the night was dark and the walks slippery.

A movement is on foot among the K. S. A. C. alumni to purchase portraits of three former presidents of the College, Doctor Dennison, Jno. A. Anderson, and Geo. T. Fairchild. The committee which has been appointed met in the county treasurer's office, March 30, and discussed the matter. One thousand dollars will be raised for the purpose. The Board of Regents has consented to give wall space in the library building for the display of the pictures.

A letter from Milton Whitney, chief of the bureau of soils of the United States Department of Agriculture, to Hon. W. A. Calderhead, notifies him that in response to his request made to the department last fall for a soil survey of Riley county, the department is now able to take up the work and the soil survey party will probably reach Manhattan about May 1. The field party assigned to this work is W. T. Carter and H. C. Smith, now at work upon the soil survey of Prairie county, Ark. Riley is the only Kansas county for which an assignment has been made for the summer of 1906.—*Mercury.*

The contract for the erection of the new smoke-stack of the power-house was awarded by the Board of Regents to the well-known contractor, Henry Bennett, of Topeka, for \$3709. Mr. Bennett is to furnish all materials and labor and is to complete the stack before the first of July. The stack will be located directly west of the power-house. It will have a 21x21 feet foundation, a 56-foot stone base, and a total height of 156 feet. Being over 50 feet taller than the steeple of Anderson hall and nearly 50 feet higher than the old chimney. It will be a land mark that can be seen for over a dozen miles in every direction.

Sophomore student Loyd Osborn, who had been in Park View Hospital for several months, suffering from a severe case of appendicitis, died last Tuesday night as the result of an operation and was buried Thursday afternoon in the Manhattan cemetery. Loyd was 22 years old. He was born in Wichita and received his school training in Oklahoma and Peru, Kan. He came here in 1903 and was known to his teachers and classmates as an earnest and studious young man of exemplary habits. His father was with him in his severe illness and his mother was present at his burial. The funeral services were held in the Methodist church and were attended by many friends and teachers, and his classmates who were there in a body. Loyd was an active member of the College Y. M. C. A.

From the chapter on "Social Sensitiveness" of Prof. W. A. McKeever's new book on "Psychology and Higher Life:" "The isolated country youth is late in his social development, but this very fact may prove of advantage to him. When he comes into the social gathering, say a party once a fortnight, he is green and awkward. Emotions stir his soul to the very depths. He stumbles and falters and blushes and perspires. The period of childish embarrassment has lingered so long with him that nothing short of a long-continued, soul-stirring experience will subdue this emotion and turn it to his better account. He is not only temporarily wrought up, but he also lives the experience over in memory during the subsequent hours of isolation, and meanwhile he experiences 'deep yearnings for the unattainable,' and forms many secret resolutions that make for better character and nobler worth. Here is the battle-ground of his most telling victories for the future. He 'fights many an inner fight,' and goes to the next social gathering with renewed confidence, but perhaps to suffer only a lesser degree of agony."

Alumni and Former Students.

Harry C. Turner, '01, who has been teaching the past winter, is now in College again, taking forestry and German.

Anna Monroe, '04, after another year in the schoolroom, has returned and will take graduate work in botany, German and zoölogy this term.

George Wolf, '05, who has been advancing by rapid strides since entering the services of the Western Electric Company, in Chicago, has again been promoted, and is now in the Apparatus Development Department.—*Jayhawker.*

C. L. Marlatt, '84, of the Bureau of Entomology of the United States Department of Agriculture, is joint author of Farmers' Bulletin No. 247, on the "Control of the Codling-Moth and Apple Scab." This bulletin contains detailed descriptions of the means of combating these two pests.

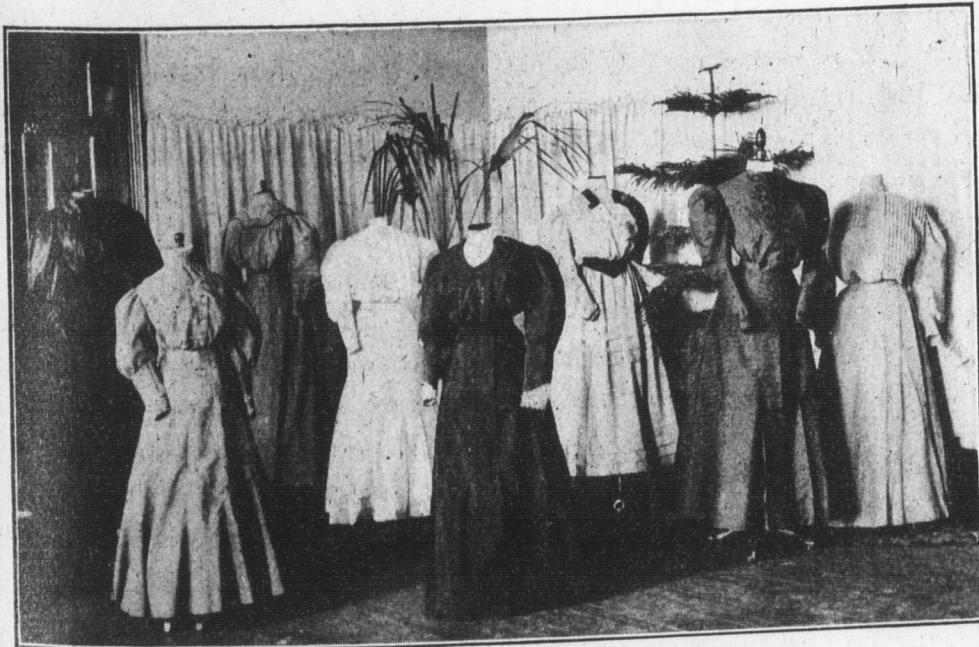
J. M. Scott, senior in 1903, is meeting with such success in his work at the New Mexico College of Agriculture and Mechanic Arts that he has recently been reelected with an increase in salary. He recently transplanted seven or eight acres of onions, running a gang of twenty-five to thirty on the job.

H. P. Richards, '02, is steadily advancing in the esteem of the Santa Fe Railway Company, with which he has been employed for about four years. He is now superintending the introduction of a new system of payment for work in the machine-shops and round-houses. By this system a man is paid at a certain rate for a job of work, but if he finishes it in less than the schedule time allowed for it he receives an additional bonus, depending on the time saved. This is designed to weed out the poor workmen and to save money for the company while paying the good workmen more wages. The system is working well in Topeka, and Mr. Richards is inaugurating it in Emporia.

Edwin H. Webster, '96, chief of the Dairy Division of the Bureau of Animal Industry, is the author of Farmers' Bulletin No. 241, "Butter Making on the Farm."

Margaret M. Mather, '02, is winning honor for herself in her work as a domestic science lecturer. During the summer of 1905 she spent eight weeks in the following chautauquas: Charleston, Paris, Sycamore, Joliet, Kewanee, Ottawa, and El Paso, all in Illinois, and in Richmond, Ind. She was recalled for two-week dates in Ottawa, Paris, and Richmond. She also spent five weeks, giving a total of sixty-two lectures, at farmers' institutes in Indiana under the direction of Purdue University, and has been reengaged for the same work, by that institution, for twelve weeks' single dates in 1906.—*Jayhawker*.

Ula Dow, '05, writes of a very pleasant revival of College memories in which sixteen were present, all graduates but three. The reunion took place at the United States hotel, Boston, Mass. Of those present she names Prof. A. B. Brown and his daughter Lucile, Chas. Weeks, Lyman Dixon, '88, and Mrs. Dixon, F. A. Waugh, '91, Abby Marlatt, '88. The others, she writes, were of the classes of '03, '04, and '05. It seems that light was shed on the matter of "How the skeleton attended chapel," a subject of considerable interest at one time. She concludes: "The loyalty and College feeling were very strong and I think others felt with me that such opportunities of coming together in honor of our Alma Mater should not be neglected."



This half-tone is from a photograph taken some time ago in the north room of the Domestic Art Department. It represents "one corner" of the exhibition of the work of the classes in dress-making. As stated in the INDUSTRIALIST, there were over one hundred all wool or silk dresses on exhibition—the work of the sophomore and second-term short-course girls.

Swine-Feeding Test.

A feeding experiment with swine was started April 12 by the Animal Husbandry Department which is in part a duplication of the one just reported on in Press Bulletin No. 149. The hogs being used in this test are from fall litters and are all cross-bred, being from Duroc Jersey, Yorkshire, Berkshire, and Tanworth sows crossed with Poland China and Duroc Jersey boars. One hundred hogs are in the test, divided as uniformly as possible into five lots of twenty head each.

Lot I is being fed a ration of corn-meal only, lot II receives corn-meal and all the alfalfa they will consume, lot III receives a ration of 92 per cent corn-meal, 8 per cent Swift's Digester Tankage, lot IV receives 85 per cent corn-meal and 15 per cent cotton-seed-meal, and lot V is fed 92 per cent corn-meal and 8 per cent Armour's Deodorized Meat Meal. The different lots were all carefully weighed at the beginning of the experiment and at the same time they were put through the dipping vat to rid them of lice. The weights were as follows: Lot I, 2765 pounds; lot II, 2620 pounds; lot III, 2635 pounds; lot IV, 2750 pounds; lot V, 2650 pounds.

A cross-breeding experiment is also being started with pigs from a Tamworth-Poland China cross, Tamworth-Duroc Jersey, Tamworth-Berkshire, Tamworth-Yorkshire, and pure-bred Tamworth. The dams of all these pigs were pure-bred Tamworth sows, all from the same litters. Each sow was crossed with a boar of different breed, and the pigs will all be fed out under the same conditions, and observations will be made as to which cross is the most profitable.

A test of feeding steers of various ages will also be made with the College show steers this season. The object of this experiment is to ascertain the exact cost of producing a pound of gain on two-year-old steers, yearling steers, and steer calves during the period of being fitted for showing. The cost of feeding such animals will necessarily be considerable higher than ordinary yard feeding, but it will give a comparison of the cost of producing gain on cattle of the three different ages.

The board of county commissioners has set the date for the laying of the corner-stone of the new Riley county court house on April 19, 1906, and has requested Lafayette Lodge No. 16, A. F. & A. M., assisted by the other Masonic lodges of the county, to take charge of the program and lay the corner-stone with Masonic ceremonies at such hour of the said date as the lodge may select.

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THE INDUSTRIALIST.

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MANHATTAN, KAN., APRIL 21, 1906.

No. 30

Farm Buildings.

In the erection of farm buildings, utility and economy are the chief points to be considered. The maxim that "haste makes waste" is especially true in respect to building. Consider well the cost. Have the purpose of the building thoroughly in mind. Carefully go over the situation and plan the building, having in view all the essential characters which such a structure should possess. Ill-arranged, badly lighted and poorly ventilated barns are often erected at the cost of thousands of dollars without careful study of the situation, plans, and all the varied purposes such buildings are intended to serve. The same outlay would, with the proper adaptation of means to end, secure buildings in which the same number of farm animals could be far better housed and more economically handled.

THE FARM HOUSE.

The accommodation for the farmer and his family demands the first consideration. In general, the size of the house is regulated to some extent by the size of the farm. In the designing and erection of the farm house, however, it is well to look ahead and build in order to meet the probable requirements of the future. The social position of the farmer and his financial circumstance will have much to do with the character of the house which he will build. But even in the humblest farm homes certain principles of construction and arrangement may be observed by which they may be made convenient, comfortable, and healthful, and these are really the important points to be considered.

It is not possible to lay out any exact rules as to the size and construction of the house, and the position, size and arrangements of the rooms, etc., because the domestic requirements and the accommodation needed will vary with each family and each farm, but a few general principles may be stated which will apply in most cases.

1. The large house is not only more costly to build, but it is more costly to furnish and more expensive to keep up than the smaller house; there is more surface to keep painted, more taxes

to pay and more work for the housewife to keep the many rooms in order. The ordinary farm house is not apt to be too large, and from the standpoint of economy it should not be larger than the farm and family demand. A house may be convenient and comfortable and yet have only that amount of room which can be economically used.

2. One of the first considerations in the building of the house is the arrangement for proper sanitation. Build a small but well-ventilated cellar. Keep the larger part of the vegetables in a cellar or root-house built outside the dwelling. A cellar full of vegetables underneath the house is dangerous to the health of the members of the family. The living and sleeping rooms should, when possible, be on the east and south sides of the house, so as to receive the sunshine. The kitchen need not be large, but should be handily arranged within and conveniently connected with other rooms, especially with the dining-room and with the rear hall or back room, which will serve also as a laundry and toilet-room. A bath-room should be located here so that water may be conveniently supplied from the reservoir on the kitchen stove. (In case of water-pressure supply, the bath room may be often preferably located up-stairs.) Suitable sewerage arrangements should be made to carry off the slops from the kitchen and wash-room.

3. For convenience, a back porch to the kitchen is handy on wash-days in the hot summer time. Front porches are also very convenient, but somewhat of a luxury. The main halls, both up-stairs and down, should communicate with all of the rooms as far as possible. The living-rooms should be connected with each other by large folding doors, which may be thrown open on occasion, or closed as desired. A large cistern beneath the kitchen or wash-room is almost a necessity in the well-ordered farm house of to-day. There is no way to secure a supply of good wash water any cheaper, and at the same time that the water is gathered from the roof and collected in the cistern, the foundations of the house are kept dry and well preserved, and the surroundings will be cleaner and more healthful.

4. For comfort, windows should be sufficient to give good light and ventilation, but still limited in number. Two many windows and doors make a cold and draughty house in winter. Have at least one bedroom down-stairs. Some of the family should sleep down-stairs to look after the house, and in case of sickness the parlor bedroom is a great convenience, if not an absolute necessity.

5. Permanency is an essential point to consider in constructing a dwelling-house. As to durability, the foundation is the most

important part. A stone or brick foundation, sunk several feet into the subsoil so that the frost will not heave it, makes the most permanent foundation. A house of any consequence should not be built on a foundation which is placed on the top of the ground. In a few years the frost will throw the frame out of plumb, cracks will open in the walls and plastering, the doors and windows will bind, and the house is soon old, uncomfortable, and unhealthful.

6. In regard to building material, brick and stone make the most permanent houses, these being also the most costly. The quality of the lumber or other building material should be carefully considered, and the carefulness with which a building is constructed has much to do in determining its durability. The care which is taken of a house or any other building, after it is built, to keep it in repair also has much to do with its length of years and usefulness in old age.

7. Ventilation other than by windows and doors should be provided in every well-regulated house. Air shafts must be built in the walls of the several rooms, which shall permit a proper circulation of air throughout the house. Science has taught us that the foul gases and colder air of a room tend to lie near the floor, while the purer and warmer air rises toward the ceiling, hence flues for drawing off the impure air should open into the room near the floor and have their exit at the top of the house, or through the chimney, and the flues which admit the fresh air should open on the outside near the base of the house and on the inside near the top of the room. By this method the warm air is not allowed to escape, and the cold air coming into the room at the top is warmed as it gradually falls toward the floor, and no draughts are produced and the temperature of the room is maintained at a less expense for fuel.

THE FARM BARN.

Next to the house the barn is the most important building on the farm, and in its relation to farm profits it stands first in importance. On stock farms, especially, a convenient and well-arranged barn is often indispensable to their economical and successful management. In the building of barns no cast-iron rules can be laid down. The plan and method of construction must vary according to the system of farming practiced. As the farming operations lean in a greater or lesser degree toward any of the specialties in farming, so must the general farm barn be constructed.

As to size, it is a mathematical fact that a given amount of space can be more cheaply inclosed in one large building than in several

small ones, and it costs less to keep the one large building painted and repaired. Bringing the stock and feed together under one roof in a conveniently arranged large barn lightens the labor of caring for the stock, and at the same time gives the animals more comfortable and more healthful quarters. These are strong arguments in favor of the large barn; but in building a large barn not only the present but the future needs of the farm must be considered, and for many farms such a building is not practicable because of the large investment required at the outset. Yet it is possible to so plan your building from the start that a large, well-arranged barn may be the final result.

The form of the barn will be decided by its location, size, special purpose or use, and the fancy of the builder or owner. Long, narrow barns are built at the greatest expense in proportion to the amount of inside space provided; the square inclosure gives the most space in proportion to outside surface of any four-sided figure; but the circle incloses more space for the amount of surface exposed than any other form. Hence, from the standpoint of economy of lumber and building material, the round barn is one of the most practical to build in many instances; it is easy and economically built, not requiring the large timbers and framework of the large rectangular barn. When well built, a round barn is very substantial and durable, every part acting as a band to bind the structure together. Such a barn may be built so as to be very convenient and comfortable for the handling and feeding of stock. It may be well lighted and easily ventilated. It does not require as many doors and windows as the rectangular-shaped barn, and there is less waste of space in it for drive-ways. Such a barn looks neat and presents a pleasing appearance, and its round surface prevents it from receiving the full force of the wind, as does a flat-sided barn.

The old-fashioned great barn, with its heavy timbers and complex frame-work, has been generally abandoned by the practical, progressive farmers of the western states, and a form of barn has been adopted in its stead which is certainly much cheaper and which affords better ventilation and lighting and more room for hay and coarse fodder in proportion to the space inclosed than did the old form of barn. By the new plan the barn is largely roof. There is no second floor, and often no first floor. The main central portion is used as a storage place for hay and fodder, and the sides or lean-tos form the stables or sheds for the stock.

The barn need not be so permanently built as the house. Methods of farming change. The son specializes in some direction

different from the system of farming practiced by his father. The barn must be altered or rebuilt to meet these changes in methods of farming. It is well, then, to build cheaply such barns as will afford the accommodation needed for the present farming operations, the question of durability being also considered in the selection of building material and in carefulness of construction.

Prof. F. H. King, in his "Physics of Agriculture," states these principles to be observed in building stock barns: (1) A shelter for live stock should in no way interfere with the best performance of the animals housed. (2) A shelter should provide ample ventilation, sufficient light and the required degree of warmth, cleanliness, and comfort. (3) The construction and arrangement of the shelter should be such as to reduce the labor of caring for the animals to the smallest amount consistent with the largest net profit. (4) The form and arrangement of the building should be such as to require the smallest first cost and the smallest maintenance expense compatible with the necessary accommodations.

Scientific principles should be observed in the ventilation of stables as well as in the ventilation of dwelling-houses. The old method (still used) of ventilating a barn by means of an open cupola in the roof is wasteful of heat and is unhealthful to the animals housed. The floor or roof over the stable should be tight, and one or more large ventilating shafts should be built opening at the floor and extending the full height of the barn and opening through the roof, like a chimney. These shafts may have doors provided in their upper courses, so that they may also be used as hay-chutes. The fresh air should be admitted as already described under ventilation of houses. It pays to have good ventilation in the stable. Experiments conducted at the Wisconsin Experiment Station and elsewhere have shown decided losses in the flow of milk and in the healthfulness of the animals housed whenever proper ventilation was not given.

Farmers who are engaged in special lines of live-stock farming need special buildings. Horse barns, cattle barns, sheep barns, hog houses and poultry houses must all be constructed after different plans, according to the needs of the animals housed, and as the methods of handling them differ. In order to build the best barn for any special purpose it is necessary to make a study of the subject and to gain all the information possible from those who are authorities and who have had experience in that line.

A. M. TEN EYCK.

A New and Valuable Special Premium for the International Live-Stock Expositions.

The following communication has been received by the Animal Husbandry Department from W. E. Skinner, general manager of the International Live-Stock Exposition:

"Rosenbaum Bros. & Co., of the Union Stock Yards, Chicago, offer the specials herein enumerated, annually to be competed for at the International Live-Stock Exposition, for the purpose of supplementing the efforts of the exposition as an exponent of the advancement of our recognized present-day celebrities in the production of the animal form by adding to the prizes that have hitherto been offered by the exposition, the breeding associations, and other public-spirited individuals.

"They propose to offer to the breeders and feeders in the different states an additional incentive to add further lustre to their achievements by bringing about a competition between state breeders.

THE SPECIALS ARE:

To the state which sends to the International animals that win:

1.....	The greatest number of points.....	\$500 00
2.....	Second greatest number of points.....	300 00
3.....	Third greatest number of points.. ..	200 00

"These winnings are then to be turned over to the Animal Husbandry Department of the Agricultural College of the state winning, as an appreciation of the improved work that is being accomplished by the agricultural colleges in the education of farmers' sons in the science and practice of field tillage, the growing and care of crops, and the science of breeding and art of feeding, directing the experiment stations receiving the money to use it in paying prizes on live stock or to successful students in judging live stock and grains, or to both, at the winter meetings known as the 'Farmers' Short Course in Agriculture' at the different agricultural colleges.

"The details governing the disposition of the premiums are to be arranged by the dean and the professor of animal industry and the professor of agriculture at the college located in the successful state."

This is something that should interest every cattle grower in our State. In former years Kansas has not exhibited as many cattle at the International as some other states. These prizes are not offered for the greatest number of cattle exhibited, but for the cattle that win the greatest number of points, and there is no state in the Union better adapted to the cattle industry than Kansas. At

present she ranks third as a cattle state, with a total of 3,353,575 head. Iowa has 4,803,339, and Texas 9,088,180.

At the last International Show the College exhibited five head of steers and one Shorthorn heifer. Each of these cattle carried a ribbon from their respective classes. The three pure-bred Short-horn steers exhibited by the College won first as a herd, and the six head exhibited won \$410 in cash prizes.

Teaching What to Grow.

What Kansas is Doing for the Short-Grass Country.—Work of the Hays Experiment Station is Claiming Boundless Prairie for Man.—The Need in Kansas of Fewer Politicians and More Mules.

From the Kansas City Star, of April 17.

I says to him: "You Kansas people would find it to your interest to have fewer politicians and more mules."

Says he to me: "If you ain't talking right nobody ever did."

ELLSWORTH, KAN., April 14.—The trouble of writing about a great big country like this short-grass region of Western Kansas is that one no sooner concentrates his mind on any one feature than investigation brings to the attention hundreds of others that lead away. This whole country teems with just the history I like to look into and write up. It is filled with men who talk to one, and can talk interestingly and agreeably. What they have been telling me over a space of one hundred and fifty miles is that to which this pen inclines and shall very soon write of, but the tougher job is to be tackled first with the hope of afterward revelling in the sayings and doings of men that were here before the buffalo left and when the red man was plenteous and aggravating in these parts.

This writing, therefore, comes down to a plain account and disquisition on farming, especially as shown to be the best way to farm in the short-grass section by the Experiment Station at Hays City.

The INDUSTRIALIST, which is published at the Agricultural College at Manhattan, gives a short account of the Hays Station in its catalogue number of 1905. The account reads:

Fort Hays Branch Station.—Congress, in an act approved March 27, 1900, ceded the Fort Hays military reservation, containing 7597.93 acres, to the State of Kansas, on condition that the State would establish and maintain there branches of the State Normal School and of the Experiment Station. The State legislature accepted the reservation in an act approved February 7, 1901, and designated a division of the land between the Normal School and the Agricultural College, by which the latter obtained about 3500 acres, including the parts most desirable for agricultural purposes. Situated west

of the ninety-ninth meridian, the Station will occupy a field entirely different climatically from that of any other station in the country, and the results obtained there ought to benefit a large region extending even beyond the boundaries of the State. Experiments are being tried on a large scale in making tests of varieties and methods of culture, with special reference to the needs of regions with deficient rainfall. Experiments are also made to determine the feeding value of the drought-resisting crops produced. This branch Station is supported by State appropriations. The funds appropriated by Congress cannot be used for the support of substations.

The United States and the State of Kansas never did a wiser and more useful thing. The effect is to concentrate experiments that show plainly to any man that he can farm and make a living in this "semi-arid" region; even more, a profit. He is shown what to grow, how and where to grow it in a land where his previous experience is valueless. Left to his own experiments it would take a long time, many years, before he could farm and make a living even, not to speak of profits.

The Fort Hays Branch Experiment Station, Kansas State Agricultural College, comprises some 3800 acres a short distance southeast of Hays City. The main buildings are about a mile south of town, just across a stream called Big creek, which is not very big ordinarily, but they say it runs water the year around. At any rate, it has enough water for sizable channel cat fish to live in, for I ate some of them in Hays, and it was a Missourian who said he caught them. On such a spring morning as the writer went out it is a pleasant stroll from town to Station. Out there every courtesy was shown this Missourian by Superintendent Elling, the agricultural students and the workers. All morning the superintendent drove me over the place, and things are there worth seeing, let me tell you, by any man appreciative of fine farming and nature in the development of her beauties. The man who can not appreciate such is in mighty hard luck here on earth to my thinking.

It is a big farm—would be a big farm anywhere—composed of bottom-land and upland of such variety and character in its soils as to give value to experiment. It is impossible to relate everything I saw, consequently the relation is confined to a few sights that most impressed the writer.

Right after our start, when we had talked a bit, the young superintendent—he knows the West, too; been a cowman in his time—spoke of such stations establishing forms of agriculture, profitable to the industrious, all over the vast semi-arid plain which stretches 300 miles from the Rockies east, and north and south from the Gulf to Canada. I liked his enthusiasm, and his

dream seems to me likely, no more a dream, in fact, than that of a man in Ford county twenty-five years ago who would have spoken of the possibility of wheat on the upland between Dodge City and the Mulberry.

Most of the Fort Hays Station experiments, it is but proper to state, have not reached the stage of attested results. The Station is yet too young. Attestation is coming on, however, and things look mighty promising. I saw a young orchard, mostly apple-trees, about four years old, apparently, that looked most thrifty, and I believe in three or four more years those trees will come into bearing like anybody's anywhere. Yet that orchard is on the upland, such ground as an old timer in Ellis county, thereabouts, would say could never raise trees. The trees were set out different from old ways and tended different. I saw some cedars and pines in the same hard upland soil that do not bear their infancy of three or four years so well. There is no trouble about trees in the lower bottom-lands. They grow there, and experiment is unnecessary.

I saw ten pens of graded steers being fed on the grain and forage raised at the Station to determine best results from varieties, and in among those steers and elsewhere I saw as fine a lot of hogs as we have on our farm in Saline county, Missouri; raised as cheaply, too. They say there is no hog cholera in this country. If that is true, comment on possible hog profits to a farmer is superfluous.

I saw the young wheat just sprouting out of the ground in the bottom fields. There are some 400 varieties being raised experimentally to find the best for the short-grass farmer. The experiments here in wheat have reached probably a fuller attestation than any of the stations. From 380 varieties raised last year side by side, each variety in its own acre plat, results showed special value in twenty-six as adaptable to this and the farther western country. I saw effective illustration of the Campbell system of preparing land in the short-grass uplands so it produces as no method has ever caused.

I saw, too, over in a big field a drill sowing spring wheat. Four mules abreast pulled that drill. They had just been purchased and were giving the satisfaction in working a mule is sure to give. The driver said they beat horses to death.

I says to him: "You Kansas people would find it to your interest to have fewer politicians and more mules."

Says he to me: "If you ain't talking right nobody ever did."

THE CIRCUIT RIDER.

THE INDUSTRIALIST

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Local Notes.

The surveying classes are out every afternoon.

The inter-class track meet will be held April 30.

The West Side Forestry Club, of Topeka, will visit the Agricultural College in a body on April 26.

The College team beat the Washburn nine last Saturday in the Manhattan athletic field to the tune of 8:1.

Mr. I. D. Graham, of the *Kansas Farmer*, formerly Secretary of this College, visited "the hill" last Monday.

The members of the Alpha Beta Literary Society had a group picture taken last Wednesday afternoon in Lovers' Lane.

The Fort Hays Branch Station will experiment extensively with the so-called Campbell method of soil culture this summer.

Assts. Ada Rice and Caroline Hopps entertained the ladies of the Faculty last Wednesday afternoon at the President's home.

The Eurodelphian Literary Society gave a special dramatic program to a full house on Tuesday night in the old College chapel.

The Heat and Power Department has recently rebuilt the electric line to the barns, which has been in very poor condition for the last year.

The College Band furnished the music at the laying of the corner-stone of the new Riley county court house last Thursday afternoon.

The College campus is beginning to wear its Sunday cloth and Professor Dickens is having his lawn mowers repaired to give it its accustomed weekly shave.

On account of the small size of Company C, the company was merged into the other three companies and Capt. H. R. Heim and Lieut. M. L. Shuler resigned.

The Printing Department is at work on a series of circulars, prepared by Professor Ten Eyck, on fertilizers, farm buildings, and other practical farm subjects.

Prof. E. A. Popenoe went to Dodge City last week to make investigations concerning the reported ravages of the San José scale. He found the orchards badly infested.

President Nichols and Superintendent Rickman attended the State Editorial Association meeting last Monday and Tuesday, at Junction City. Institute Secretary Miller read an interesting paper before the session on Tuesday evening.

Contractor Henry Bennett has started work on the new power plant smoke-stack. The foundation will be 25 by 25 feet, and will contain 2646 cubic feet of cement concrete.

The annual inspection of the cadet battalion will occur at the regular drill hour on Tuesday, May 1. Major Mann, of the general staff, Washington, D. C., will make the inspection.

The annual junior-senior reception was held Monday evening. The event was unusually enjoyable, the most interesting feature of the amusements being the class prophecies. The juniors served light refreshments.

The Manhattan papers are publishing pictures of the new Riley county court house, now in process of erection, but the cuts look as unlike as the Parthenon and Pantheon. It is evident that somebody got hold of the wrong cut.

On account of the Odd Fellows' dedicatory services to be held at Eureka Lake, April 26, the railroads are granting a round-trip rate of one fare plus 50 cents. This rate goes into effect April 25 and can be taken advantage of by a great many of those who come to Manhattan on that date to attend the annual Shorthorn sale of F. M. Gifford.

Engineer Lund says that the College purchases about three hundred incandescent lamps per year. There are about eight hundred incandescent lamps, twenty-seven arc lights and two mercury vapor lamps connected with our lighting system. The Heat and Power Department furnishes power for eighteen electric motors, not counting the many motors of the Department of Electrical Engineering.

The Botanical Department has recently received for the seed laboratory and testing room a new design of case for the seed collection of the department, which is now the largest in the West, numbering some fifteen hundred species. The case is of sheet steel, of sectional design, capable of enlargement by the addition of new sections after the manner of the various well-known book-cases of this type of construction. Each section contains four drawers, which can be completely drawn out for examination, while still remaining held in horizontal position by a sliding sub-frame. Each drawer contains a removable tray, divided into thirty-six compartments for bottles of a standard size and form adopted by the department. The case is mouse and dust proof, will not warp, and is capable of indefinite extension. Five cases on a common base constitute a stack, and the bases are so constructed as to admit of two stacks being ranged back to back, forming a section of ten cases with spaces in the drawers for a seed collection of one thousand four hundred forty samples. The whole is finished in handsome olive green exterior and presents a substantial appearance. The design, which is wholly original, was furnished by Professor Roberts and manufactured after his specifications by the Berger Manufacturing Company, of St. Louis, Mo., and Canton, Ohio, who are manufacturers of steel office desks, etc.

Last week we chronicled the death of one of our student friends; this week grim death has again visited College, claiming one from our midst. Jno. C. Smith, a student whose home is in Childress, Texas, died of heart failure Saturday morning at the J. N. Alexander home, on Manhattan Avenue. The deceased had been in ill health for a number of years. The remains were accompanied home by Miss Emily Smith, a sister of the deceased, who is a member of the senior class.

Some years ago a young man of the senior class was permitted to take cooking, as a special study, and the teachers reported that he earned a very high term grade. He obtained the permission of the Faculty for reasons that were considered satisfactory by that conservative body. At present there is a young woman graduate (Miss Spencer) studying architecture in the architectural course, and an undergraduate (Miss Hepworth) working in the carpenter-shop. Both of them are doing good work.

The Heat and Power Department has received a new traction-engine from the Advance Thresher Company, Battle Creek, Mich. The mobile is of the latest type, with heavy plow gears and plow attachments, such as is used now by many of the most advanced farmers. The engine is of twenty-six horse-power, "compound." It was sent here by the company for use of the Heat and Power Department in teaching the students the handling and caring of farm engines and traction-engines and is a beautiful machine in every respect. This class of work is very popular with the students, no less than 82 young men taking this work the present term. Our thanks our due the company which has been so kind and thoughtful of our wants.

Alumni and Former Students.

L. E. Potter, '00, is located at Myton, Utah, where he is proving up on his claim which he drew last August in the Uinta land opening.

E. P. Smith, '95, and Mabel (Cotton) Smith, '96, now get their mail by R. F. D. No. 1, Windsor, Colo., and Eleanor M. White, '01, should be addressed at American Falls, Idaho.

Harold T. Nielsen, '03, was married to Hope Frances Sherwood, Wednesday, the 11th of April, 1906, at Takoma Park, Md. After May 1 they will be at home at Arlington Farm, Arlington, Va.

D. W. Working, '88, county superintendent of Arapahoe county, Colorado, is having an interesting time compelling the county commissioners to levy taxes for the support of schools in accordance with the law.

Anna (Dahl) Davis, '98, with Mr. Davis, visited the College and relatives Monday and Tuesday on their way home to Montrose, after attending the Messiah at Lindsborg. Like all the rest, Mrs. Davis found many changes on the campus and few acquaintances to greet.

A. E. Oman, '00, senior student in the Yale Forest School, will spend the spring term on the forest tract in the southern White Mountains. During this time his address will be Waterville, N. H.

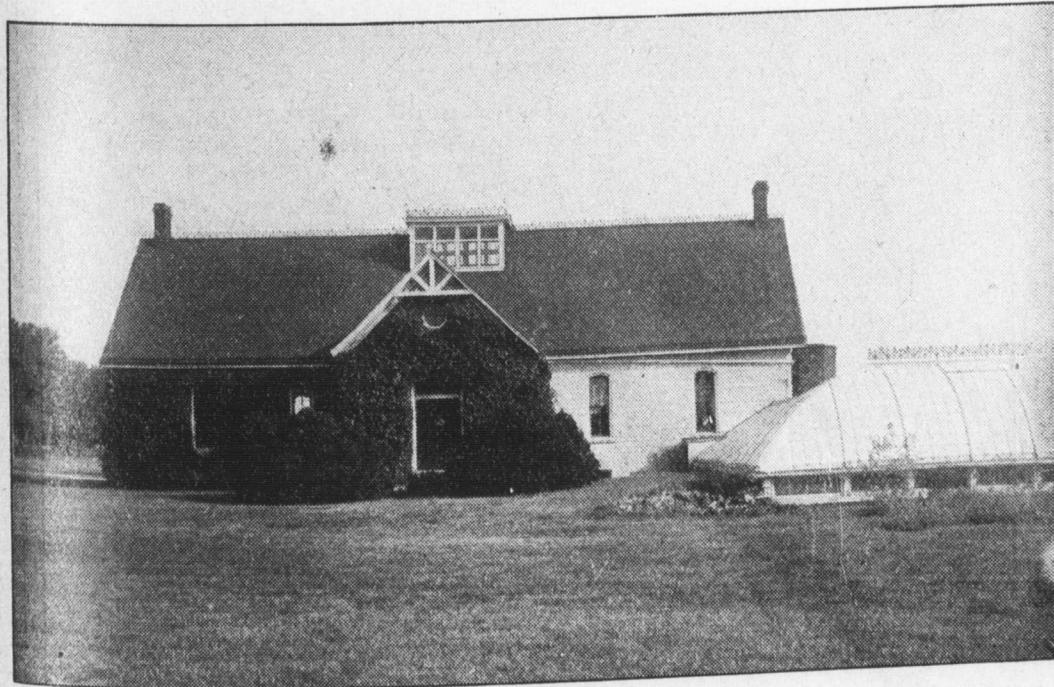
Lena Finley, '05, who has successfully assisted in the Domestic Science Department the last two terms, started for California this week where she anticipates a delightful visit. She will stop at El Paso on the way.

O. I. Purdy, '99, has moved from Albert Lea, Minn., to South Omaha, Neb.; N. L. Towne, '04, gets his INDUSTRIALIST at Eddyville, Neb.; and Hattie Noyes, '91, is again at Zeandale, after teaching the past winter at Maplehill.

At a meeting of the resident alumni last Monday evening it was voted to tender an informal reception to the visiting alumni and the graduating class. The occasion is especially designed to be a social one and to give opportunity for renewing old acquaintance and forming new.

Lizzie (Clarke) Helmick, third-year student in 1884, gives some of her experience in the Philippines in *Everyday Housekeeping* for March. A story of "The Redemption of Enrique," by Elizabeth Allen Hewitt (Mrs. Helmick), gives an interesting view of some of the conditions there.

D. W. Randall, '99, visited home and the College this week on his way to Seattle. After a year's service as a student in the Office of Public Roads, Mr. Randall is now sent out as a road engineer and will be in charge of the construction of demonstration roads in Washington and elsewhere. As he is moving about so much his address will be Manhattan, Kan., and mail will be forwarded from there.



Horticultural Hall, now being replaced by a new and modern structure.

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College year begins September 20, 1906. Examination for ad-
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Catalogue or other information free, address

E. R. Nichols, President
Manhattan, -- Kansas

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Geo. C. Wheeler, B. S. (K. S. A. C.)	Assistant in Animal Husbandry
Leonard W. Goss, D. V. M. (Ohio University)	Assistant in Veterinary Science
Melvern F. Thomas, B. S. (Texas A. & M. College)	Assistant in Mechanical Engineering
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Farmers' Institute at Hays.

A very profitable institute was held on Monday, April 23, at Hays, where the Hays Branch of the Kansas Experiment Station is located. Regent Griffith had taken the matter in charge and had appointed three prominent farmers, Peter Johnson, George Palmer, and J. Fellers, as a special committee to look after all details. It was arranged to spend the time from 10 o'clock to 12 at the Experiment Station, examining the work now under way. Accordingly, at 9:50 a procession of twenty or more buggies, carriages and wagons started for the Station, carrying about eighty farmers and others interested. All were taken to the experimental grain fields, when Mr. Elling, acting superintendent, explained the purposes of the different experiments. First there were the ten eight-acre plots of winter wheat with different amounts of barn-yard manure to the acre and different times of application—before plowing, right after plowing, just before seeding, and just after seeding. Then the next were for early, medium and late sowing of spring barley, and next oats plots with different amounts of seed per acre. At present all plots seem to be about on an equality, but the real test will come at the threshing machine.

Next the procession went to the large plots of *Bromus inermis* and alfalfa, and this was a pretty sight. On the highest land on the whole 4500 acres the field of *Bromus* looked fine, standing up six or eight inches high and with a fine color, while just a short distance away the fields of buffalo-grass were brown. The one could have afforded fine pasture three weeks ago while the latter will not be worth much for more than three weeks yet. It was an object-lesson to the farmers who had feared that *Bromus inermis* would not grow "out west." The different plots of alfalfa showed well on the top of the hill, proving that alfalfa would do well on the uplands of Western Kansas.

From the experimental fields all went to the feed yards, where ten lots of young cattle are being fed on different rations—alfalfa and ear corn, alfalfa and shelled corn, alfalfa with corn-and-cob meal, alfalfa and millet with corn-meal, etc. At each stop Mr.

Elling or Professor Ten Eyck spoke briefly of the experiments and the purposes of them and the methods of farming.

At 2 o'clock the G. A. R. hall was filled with interested farmers and their sons and about one hundred students of the normal school, practically all sons and daughters of farmers, and most of them to teach in the rural schools of Western Kansas. A permanent farmers' institute was organized, with a president and secretary and four vice-presidents. A meeting will probably be held next winter with an agricultural exhibit and with a part of the program in German.

Prof. Oscar Erf, of the Kansas State Agricultural College, spoke earnestly on the importance of "Farm Dairying," dwelling upon the economic importance of dairying for preserving the fertility of the soil and the great financial returns of a well-equipped dairy. He showed the necessity of having profitable cows, and said that to be profitable a cow must produce over one hundred seventy-five pounds of commercial butter, while the average Kansas farm cow produces only about one hundred pounds of butter. He then explained briefly the simple methods of finding out which cows of a herd were profitable and which were making a loss. He emphasized the fact that dairying always led to better buildings, improvement of the farms, and to smaller farms and better farming.

Prof. A. M. TenEyck then spoke on "Seed Selection and Soil Culture." This most excellent address will be furnished in abstract to the State press in a few weeks, and only the outline given here. It will be printed in full in a later number of the INDUSTRIALIST. He spoke emphatically against the too prevalent method of sowing poorly cleaned wheat, wheat of small berry and low vitality, and said that every farmer should have a small field to be set apart especially for growing seed wheat, seed barley, seed oats, etc. On this sow only the choicest seed and from this select choice seed for the big fields. He said many farmers were claiming to use the "Campbell" system who were neglecting the fundamental idea of the system. Harrowing frequently in August when there was no rain would do harm rather than good, because it pulverized the soil too much, leaving too flat a surface exposed to the winds and it conserved no moisture because there was none to conserve. He stated emphatically that the first step in soil culture was disk ing as soon after the binder as possible, preferably following the binder with the disk, thus conserving the moisture then in the soil, then the plowing could come on in two or three weeks and the ground would have moisture and turn over and fall into a compact condition in the furrow; the harrow should follow

the plow to further conserve moisture, and then the ground should be harrowed after every rain that is hard enough to form a crust. If no rain came he questioned the value of more than one harrowing until ready to seed, aside from the harrowing that followed the plowing. He recommended spring harrowing where rains had formed a crust.

After the lecture, general discussion, questions and answers lasted for nearly another hour and was of great value. It showed that Ellis county had many thoughtful farmers who were mixing brains with their farming.

Institutes were held this week on to the west line of the State: Wakeeney, Tuesday; Gove, Wednesday; Oakley, Thursday; and Sharon Springs, Friday, with the same subjects and speakers as at Hays—Professor Erf on “Farm Dairying” and Professor Ten Eyck on “Seed Selection and Soil Culture.”

A Test with a Gopher Exterminator.

On Tuesday, April 17, Mr. Flint Saunders, of Lincoln, Kan., inventor of a “gopher exterminator,” demonstrated the use of his apparatus in the presence of Professors TenEyck and Shoesmith, of the Agricultural Department, and Professor Scheffer, of the Entomological Department of the Kansas State Agricultural College.

In order to demonstrate the effectiveness of the method of destroying gophers a runway was located, the apparatus for generating the gas which destroys the gophers was placed at one end of the runway, and about one hundred feet distant a hole was dug across the runway and a cat placed in the hole under a pane of glass, so that her movements might be observed. In just four minutes from the time Mr. Saunders began to pump gas from the generating can into the runway, the cat, one hundred feet distant, began to show signs of the effect of the gas. Mr. Saunders then removed the apparatus and closed the runway. In five minutes from the time the generator was started the cat had collapsed, but she continued to breathe for some time. Sixteen minutes later she was removed and pronounced dead by all present. Twenty-three minutes from the time the first gas was forced into the runway Mr. Saunders touched a match to the hole which was opened about ninety feet distance from the point where the gas was admitted and the gas immediately took fire, causing an explosion which followed the runway its full course, making a rumble that was distinctly heard. There was little question among those pres-

ent but that the gophers in the section of the run treated were destroyed.

The apparatus used by Mr. Saunders, and for which he has applied for a patent, is easily understood, being simply a generating can in which is placed carbon bisulphide, a deadly poison which easily evaporizes. By means of a bellows attached to the can, air is forced into the can, the gas evaporates, and the mixed gas and air is forced through a hose into the runway. Carbon bisulphide being a very heavy gas tends to settle to the bottom of the runway and does not readily rise through the soil into the air above. Moreover, the gopher is very careful to close all exits, so that the runway is fairly air-tight, although not perfectly so, since there must be some movement of air in order that the gas may force the air out when it enters the runway. In the course of a few minutes, however, as shown by the experiment, the whole runway for a distance of one hundred feet or so becomes filled with the carbon bisulphide gas. It is doubtful whether gophers escape or attempt to escape from this gas, as its action is very rapid.

We learned, however, from this experiment that it is quite necessary to do a little preliminary work the day previous in order to be quite sure of destroying the gophers. In the present instance the gophers evidently had a very extended runway and the work was done only in one end of it, and we did not discover just how far the runway extended in another direction. The result was that this colony of gophers was not entirely destroyed, as they are beginning to work again. By going into the field, however, the day previous to using the treatment and locating the runways and digging across them in places it will be possible to locate the gophers, since during the night a gopher will close up the runway only on the side of the runway in which he is located, leaving the other side open. A little preliminary work of this kind will not only make more sure this method of killing the gophers but will decrease the expense in the use of carbon bisulphide.

It was not determined by the experiment how costly this method of exterminating gophers may be, and doubtless this will depend much upon the extent of the infection of the field as well as upon the care of the operator. Mr. Saunders claims that the cost per acre for clearing out gophers is relatively small and that the method is practically sure when the apparatus is properly and carefully used. The cost of the machine complete is \$5.00. A farmer may use it on his own farm or on his neighbor's farm, loan it to his neighbors, or make a business of killing gophers for others. The

apparatus belongs to him, and he may use it just like he would use any piece of machinery bought on the market.

Further experiments will be carried on by the Entomological Department of this College in order to determine the effectiveness of Mr. Saunders' apparatus, as well as to determine the cost of clearing fields of gophers by using this method, and reports along this line will doubtless be made later.

The San Jose Scale in Kansas.

Press Bulletin No. 150, from Entomological Department.

While no systematic survey of Kansas has been made to ascertain the absence of the San José scale in the State, the evidence available to date has given the impression that the pest has not occurred to any recognizable or at least serious extent within our boundaries. The testimony of orchardists and nurserymen in convention in the various horticultural meetings, the reports of those engaged in the inspection of nurseries so far as this work has gone, and the correspondence of the entomologists in the State schools has not disclosed the presence of the true pest, and many supposed cases have been ascertained by competent students to have been other forms of injury.

A month ago, however, there was received at the Kansas Experiment Station, from Mr. B. S. Williams, of Dodge City, an apple twig crowded with the true San José scale, and as the indication was that of a seriously infested tree, a visit to the locality was made to determine the extent of the attack. An examination of the locality showed several apple-trees of ten years of age thickly incrusted with the insect, and in most of the residence lots in the surrounding quarter of the town the condition was the same, the fruit-trees of all sorts showing the insect in greater or minor abundance. Here and there was noted a tree of the apple, pear or peach so thoroughly attacked that it was dead or dying, while others showed the presence of the scale in smaller quantities, permitting the relief of the trees if prompt measures were taken for the destruction of the pest.

Besides the sorts of fruit-trees above named, inspection showed the following to be more or less infected: Plum of all sorts, native and cultivated; cherries of several horticultural groups, apricot, plumcot, grape, currant, rose bushes of several types, and among ornamental or shade trees, osage orange, cottonwood (one case), and Russian mulberry. So far as ascertained the scale did not occur on boxelder, black locust, honey-locust, elm, althea, the honeysuckles, virginia creeper or spiraea, though plants of these

sorts, among others, were growing among or near infested fruit-trees. On the whole, however, the infestation was as serious as might be feared anywhere, including within the limit of the area about a dozen blocks in Ward 2 of the city, with scattered cases outside of this general section. An attempt to locate the site of the original infection was without result, owing to the general and even distribution of the pest within the area indicated. It was also found that suspicion could not be placed with likelihood of proof upon any nursery, as the trees were largely purchased from agents, and the places where they were grown were not known originally, or were not on record.

For the information of those who have not seen this insect, it may be described as a small sap-sucking louse, active when first born, but soon becoming immovable on the bark, leaf, or fruit, and secreting at this stage a flattened protective scale over its body, losing at the same time its more obvious insect structure, and devoting its energies thereafter to feeding on the sap of the plant, and producing young in great numbers. In cases where the scale lice are in moderate numbers, they will occur in small colonies or groups, or scattered singly over the bark, presenting then no striking mark to the vision unless one is looking for them. When scattered in this manner on younger bark the tissue is generally reddened around them, a feature which lends to their more ready recognition. The adult females are the largest scales, slightly irregular in their convexity, of a dull gray or lighter, with a distinct boss or center of a different color and appearance. Young scales, also abundant at the present season, are smaller, more distinctly circular, and of a darker color, often nearly black. All sizes occur together in the clusters, frequently so crowded that the true color of the bark is not visible for the scurfy covering consisting of the numerous insects.

In May the female gives birth to young, and these travel over the tree in search of unoccupied spaces, which they occupy and then begin the secretion of the protecting scale as above. With several indeterminate broods each season, the new growth is covered as fast as made, and the tree is notable to outgrow its enemy. The injury is done by the abstraction of the sap from all parts of the tree by the hundred thousand beaks throughout the entire growing season.

Owing to the form and feeding habits of the scale lice, the effective agents in their destruction are practically limited to the various washes and sprays that act as contact poisons or corrosives. Among these are crude petroleum, coal-oil, resin washes, and com-

binations of lime, sulphur, and salt, among others. Several of these are open to the objection that while destructive to the insects they also endanger the tree. Others can not be relied upon to kill the insects in all stages, necessitating the frequent repetition of treatment. At the present date the leaf and flower buds being expanded, perhaps as satisfactory a treatment as any is the application of a spray of moderately strong kerosene emulsion, previously preparing the trees by pruning off all that can be spared of the branches, to reduce the surface to be operated on. The application of this spray should be several times repeated during the spring and summer. This will not be completely effective, but may serve as a temporary check. It should not need saying that every infested twig and all other parts should be carefully picked up and burned, to prevent the further spread of the pest.

A more satisfactory treatment is the application, in the dormant season of the tree, of a wash or spray of the lime, sulphur and salt mixture, as employed with good effect in eastern orchards. With this material treatment must be deferred until the tree is again dormant, as the buds are now expanded.

The presence of this serious pest in Kansas orchards, even in the single case noted, is a warning that our State should be no longer without the protection of an effective inspection and quarantine law controlling the sale and shipment of trees and other nursery stock liable to transport this dangerous insect, and providing for the inspection of orchards, generally, over the State.

E. A. POPENOE.

Saving and Handling Manure.

There is no more wanton waste on the farm than the too common waste of barn-yard manure. The common practice of throwing the manure from the stables out under the eaves of the barn and leaving it for a long interval in the yards exposed to the leaching of rains or to decomposition by drying and heating, results in a great loss of plant-food elements. An experiment in determining the loss of manure by exposure was carried on at the Cornell Experiment Station, in 1890, as reported in Roberts' "Fertility of the Land." In this experiment horse manure, in a loose pile, valued at the beginning at \$2.30 per ton, lost 42.6 per cent in value. Cow manure, valued at \$2.29 per ton, lost 30 per cent in value. In another experiment a ton of fresh manure, valued at \$2.30, lost 42 per cent in value by an exposure of six months in the open yard. In comparison with this, manure which had been kept in a covered yard, in 1883-'84, being the entire product of the stock for that year, when analyzed was found to be

richer in nitrogen, phosphoric acid and potash than fresh manure, and was valued at \$3.61 per ton.

Probably the most economical way to handle manure when stock are kept in stables is to haul directly from the stables to the field, spreading the manure at once, preferably on grass or alfalfa land, although the manure may be hauled onto any land which is in condition to receive it. It may not be practicable to recommend the use of covered barn-yards in the West, but it is practicable to furnish abundant shed room for sheltering stock during the winter feeding season. It is also essential in order to save the manure, especially the liquid manure, to give a liberal supply of bedding for the stock. Usually farmers in the West have plenty of straw and roughage which may be profitably used for bedding in the stables, sheds, and yards. The barn-yard should be well drained; however, there is apt to be a great loss of the soluble elements of plant-food where the drainage water is allowed to run away through natural drainage channels. If possible, such drainage should be turned over grass meadows or pastures, in order that the most available part of the plant-food in manure may not be entirely lost. It is not possible to haul manure daily from the yards and sheds, but the farmer should have a regular time for hauling out the manure and cleaning up the yards; preferably, this work should be done two or three times during the year in order not to allow too great an accumulation and the waste which is sure to take place by decomposition and leaching.

The advantage of spreading manure with the manure spreader is that the manure can be more evenly and thinly distributed. It is better to spread manure rather thinly over a large area of land than to spread it thickly over a small area. By heavy application there will be not only a waste of manure but when a heavy coat of manure is plowed under it is apt to injure the crop by "burning out" in a dry season. When the manure can be handled daily or can be hauled from the stables as made and spread on meadow or pasture land, it is very handy and almost necessary to use a manure spreader. The use of the manure spreader is not so practical, however, when the manure is hauled out only once or twice a year, as is the common practice. It is usual in such a case to turn all hands and teams to the work of hauling manure, thus making it impracticable to use a single spreader, and several manure spreaders could not be profitably owned and operated except on very large farms. It would be possible, however, for farmers in a neighborhood, by exchanging work, to coöperate in the hauling of manure, when several manure spreaders might be economically owned and operated in a single neighborhood. A. M. TEN EYCK.

About twenty members of the West Side Forestry Club, Topeka, visited College in a body last Thursday and spent the day studying the shade-trees and ornamental shrubs of the campus and experimental grounds. They were being escorted by President Nichols and Professor Dickens. The professor gave them a practical lecture on landscape-gardening and forestry, illustrated by the beautiful specimens of native and foreign trees growing on the College grounds. At noon the Domestic Science Department invited the club to Kedzie Hall, where a dainty dinner was served by the senior girls. The members of the club were much pleased over their cordial reception and the many interesting subjects which they noticed at every turn, and voted to come again next fall.

Last Wednesday was a red-letter day in the history of College athletics. Our team went to Lawrence on Monday and beat the famous nine of the Haskell Indian Institute 11 to 0. On Tuesday they went to Baldwin and vanquished the preachers of Baker University, beating the Methodists 2 to 1. On Wednesday they returned to Lawrence and played the State University, conquering them in a hotly contested game to the tune of 8 to 6. When the news of the three consecutive victories arrived at Manhattan everybody felt that there must be a fitting celebration of some kind, and the student body, many members of the Faculty, and several hundred citizens went to the U. P. depot to receive the heroes. There must have been fifteen hundred people waiting around the station when the Colorado flyer arrived with the athletes. A procession was immediately formed, headed by the College band, the team was put aboard an omnibus and drawn up town by a company of several hundred students, who were shouting and singing, while the rear was brought up by women students, citizens and Faculty members in carriages or afoot. The procession halted in front of Pres. E. R. Nichols' residence where addresses were made and fireworks burned. All of this was done spontaneously and without much of a program. It was one of those outbursts of enthusiasm that requires no previous arrangements to be successful. When Cæsar's famous dispatch, *Veni, vidi, vici*, arrived in Rome there could not have been more genuine rejoicing in the eternal city than there was at Manhattan on the 25th of April, 1906. Another victory was scored yesterday on the home field, when our boys won from Ottawa University, 23 to 7.

Alumni and Former Students.

G. W. Hanson, '00, of Marquette, came down to the dedication of the Odd Fellows' Home, and visited the College Friday.

George L. Melton, '93, who has been a student of history at the University of Chicago the last two years, has been awarded a travelling fellowship.

Among the visitors last Thursday was Bertha Ingman, '98, who is still at her old home near Barnes. Her brother, C. B. Ingman, '97, is prospering on the farm.

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Local Notes.

President Nichols is working on the catalogue for '05-'06.

Mr. P. L. Alderson, of Burden, visited his son at the College on Wednesday.

The mid-term examinations of spring term will be held on Saturday, May 5.

The advisory board of the Y. W. C. A. entertained the members of the association Friday night at President Nichols' home.

The Farm Department is laying a six-inch tile drain from the power-house to the draw, west of the Women's Gymnasium.

We see by the Jewell county papers that Regent J. W. Berry is being brought out by his many friends as a candidate for representative.

Professor Walters' new residence on Bluemont Avenue is nearly completed. The Professor hopes to move into it by Commencement.

Among our many visitors last week we noticed ex-county clerk I. Soler, of Washington county. He was accompanied by his son, who intends to enter College next fall.

Contractor Henry Bennett has a large force of men at work on the concrete foundation for the big chimney. The concrete work will require about 400 sacks of cement.

The Music Department is preparing a fine program for its second grand recital, to be given on Wednesday night, May 16. A full program will be published in a week or two.

Professors Erf and TenEyck were out on an institute trip this week along the U. P. railroad in the western part of the State. They started at Hays and closed at Sharon Springs.

J. M. Cooke, a student in the dairy short course, leaves next week to take a position as superintendent of the bottling department of the Almito Creamery Company, Omaha, Neb.

President Nichols went to Kansas City last Saturday to order a set of side curtains and backgrounds for the rostrum in the Auditorium. The new decorations will be here for the Commencement entertainments.

The Websters entertained the Eurodelphians at Eureka Lake Saturday evening, April 21. The party was taken to and from the Lake in buses and wagonettes. While out there a fine "feed," as the boys termed it, was served.

The last number of the College lecture course will be by L. B. Wickersham, "the great master lecturer, the man who pleases all the people." He will tell us of his "Day Dreams" May 2.

President Nichols went to Chicago last week to attend the annual meeting of former students of the College. There were about seventy students present. A report of the session will be found in another part of the INDUSTRIALIST.

Contractor Walter Stingley has completed the stone walls of the new Horticultural Hall up to the arches of the windows of the main story. He has a large force of mechanics on the ground and is pushing the job with becoming energy.

Oiling a road does not prevent it from getting dusty. The road east of College, which received a coat of crude oil last fall, behaved well during the winter months and during the wet spring weather, but it got just about as dusty as any Kansas road can be during the windy days of last week.

The College Band took a prominent part in the dedication exercises of the Rebekah-Odd Fellow Home at Eureka Lake last Thursday. They gave two program concerts, beside the pieces interspersing the ceremonies. The band has never been in better shape, and we congratulate them on their fine music and perfect discipline.

Prof. Edwin Erle Sparks, Ph. D., Dean of University College, the University of Chicago, will deliver the Commencement address at the College at 10 A. M. June 14. Doctor Sparks' subject will be "Making an American." The Doctor is a very interesting speaker and has a pleasing personality and the three thousand persons who get seats in the Auditorium will be fortunate.

More than three hundred people attended a farmers' institute at Hays City on April 23. The forenoon was spent by the farmers at the Hays Branch Experiment Station, examining the experiments being conducted in wheat, grasses and corn and in feeding cattle. The afternoon was devoted to lectures on farm dairying and soil culture. An institute organization was perfected, and next fall an institute and agricultural exhibit will be held. Professors Erf and Ten Eyck, of the Agricultural College, were the principal speakers. A full account of the institute will be found in another column.

Bulletin No. 132, recently issued by the State Agricultural College Experiment Station, Manhattan, Kan., is a detailed account of an experiment in steer-feeding at the Fort Hays Branch Station. Sixty-four head in eight lots were used. The experiment included a comparison of the roughages, alfalfa hay, Kafir-corn hay, and sorghum hay, and a mixture of these; comparison of the grains, corn-and-cob meal, Kafir-corn, wheat, and a mixture; and a comparison of different proportions of protein. In general the results showed the very great advantage of the use of alfalfa hay and of the balanced ration. The bulletin may be obtained free by addressing the Station as above.

M. Myrtle Mather, '02, has been elected to the chair of home economics in Lincoln College, Lincoln, Ill. She continues to be in much demand for lectures on domestic science topics.

Prof. C. L. Marlatt, ['84] of No. 1440 Massachusetts avenue, whose engagement to Miss Mackay-Smith, daughter of Bishop and Mrs. Mackay-Smith, was announced some weeks ago, and whose marriage will take place at the Bishop's summer home, was host at a tea party this afternoon, when a number of the young members of society were guests. Professor Marlatt has a huge cherry tree on his grounds, and it is his custom to give a cherry tree tea each spring. His guests were received by his sister, Miss Marlatt ['88], and there were a number of young matrons present as chaperons, among them Mrs. David Fairchild.—*N. Y. Tribune.*

In an interesting letter to Professor Kammeyer, H. V. Harlan, '04, describes a number of the things that came under his observation on his trip to the Philippine Islands and since his arrival. Mr. Harlan is professor of agriculture at the Provincial School in Iloilo. He says that his students are intelligent and have accomplished wonders in their four years of instruction. Iloilo is the second port of the Islands. The foreign element is not very large, but is extremely pleasant, and there is more social entertainment than he can find time to attend. Though he is just eleven degrees north of the equator and has an active volcano in the back yard (sixty miles away), the climate is cool, especially at night. "The trip from Manila to Iloilo is more beautiful than that of the inland sea of Japan; thousands of islands fringed with palms and coral reefs varied with rugged mountains and abrupt cliffs characterize the scenery."

SECOND ANNUAL MEETING OF THE KANSAS STATE AGRICULTURAL COLLEGE ALUMNI ASSOCIATION OF CHICAGO.

We are indebted to Hortense (Harman) Patten, '95, for the following account of the reunion of the Chicago alumni:

Saturday, April 21, was a date of unusual interest to K. S. A. C. alumni and students of Chicago and vicinity. At the Saratoga hotel there was a scene of much festivity as, one by one the members of the Chicago contingent dropped in until a merry party, nearly sixty in number, had gathered together. The greetings of friends who had not met in many years were heard on every side, and such remarks as the following were frequent: "Why old man, you're getting fat." "I shouldn't have known you, Doctor—that Vandyke beard,—." "Fifteen years, and you haven't changed a bit." "Bald, by George!"

President Nichols was enthusiastically welcomed by all and was kept busy answering questions about the College and old graduates. The time for visiting passed all too quickly and the summons to the dining-room came. The tables were daintily spread and the breaking of bread with so congenial a company seemed a feast indeed.

The program began with an interesting speech by Pres. D. G.

Robertson, '86, introducing Dr. Wendell Williston, '73, of the University of Chicago, as toastmaster. Mr. Robertson presented Doctor Williston with a gavel which was once part of the timbers used in the old Bluemont College building, which wood, he averred, had oft vibrated in response to Doctor Williston's youthful oratory. Doctor Williston replied in a hearty speech, in which he expressed his appreciation of the little souvenir, and assuming his duties as toastmaster introduced each speaker on the following program with an appropriate story:

College Enthusiasm.....	John V. Patten, '95
From Kansas	Madeleine Wade Milner, '91 (With Apologies to Walt Whitman.)
Solo.....	Henrietta M. Hofer, '02
Reciprocity Among Colleges.....	George M. Logan, '02
How an Alumnus can Help His Alma Mater.....	Raymond H. Pond, '98
Saxophone.....	Louis B. Bender, '04
Limericks.....	Myrtle Mather, '02
Solo.....	Ione (Dewey) Sutherland, '93
The Kansas State Agricultural College.....	Pres. E. R. Nichols
Song.....	Alma Mater
"That Reminds Me"	Edwin A. Munger

Rev. Dr. Milner, formerly of Manhattan, and Professor Sparks, of Chicago University, being present, these gentlemen kindly favored the association with words of good fellowship and encouragement.

After singing *Auld Lang Syne*, some of the later graduates gave the College yell with much vigor and the banquet was over. Every one crowded around President Nichols to bid him good-bye and fairly loaded him down with messages of good cheer for the dear old College on the hill.

The officers elected for the ensuing year are: John V. Patten, '95, president, and Ernest H. Freeman, '95, secretary and treasurer.

Following is a list of those present: Pres. E. R. Nichols; Kate (White) Turley, '71; Samuel Wendell Williston, '72; D. G. Robertson, '86; W. E. Whaley, '86; S. N. Peck, '87; Lora (Waters) Beeler, '88; Clarence E. Freeman, '89; E. T. Martin, '90; Grant Dewey, '90; Madeleine W. Milner, '91; Ione (Dewey) Sutherland, '93; Dr. J. W. Evans, '94; John V. Patten, '95; Hortense (Harman) Patten, '95; E. H. Freeman, '95; A. C. Peck, '96; Mable (Crump) McCauley, '97; Raymond H. Pond, '98; Harry D. Orr, '99; W. F. Lawry, '00; M. Myrtle Mather, '02; Geo. M. Logan, '02; Henrietta M. Hofer, '02; Clara Goodrich, '03; Raymond G. Lawry, '03; E. C. Gardner, '04; L. B. Bender, '04; R. T. Kersey, '04; Harry P. Hess, '05; C. P. Blachly, '05; Olive B. Dunlap, '05; Geo. Wolf, '05; Mrs. S. N. Peck; Z. T. Turley; Mr. Mills; Mrs. S. W. Williston; Rev. D. C. Milner; Dr. Stella Gardner; Edwin A. Munger; Mr. and Mrs. Geo. F. Dewey; Geo. W. Beeler; Mrs. Grant Dewey; Mrs. B. White Shirley; Mr. Thos. Shirley; Mrs. Geo. Evans, Mrs. O. R. Wakefield; C. A. Hite; Chas. H. McCauley; Elmer House; Mrs. Elmer House; Mrs. D. G. Robertson; Miss Lillie Abbott and Miss Alva Abbott, daughters of Martha A. Abbott, '67; also Professor Sparks, of the University of Chicago.

Press Notices.

Dickinson county is the banner county in the Boys' Corn Contest so far reported, having an enrolment of 480; but Ottawa county has raised the most money for premiums, nearly \$300.

Corn planting is under way on the Kansas State Agricultural College farm this week. A great many valuable experiments are to be carried on this year, and many of these will be reported in the INDUSTRIALIST throughout the season and then later in full.

Prof. A. M. TenEyck and Prof. Oscar Erf, of the Kansas State Agricultural College, held a series of institutes on the western line of the Union Pacific this week, beginning at Hays on Monday, then Wakeeney, Gove, Oakley, and Sharon. Their lectures were on "Seed Selection and Soil Culture" and "Farm Dairying."

Professor Eyer, of the Electrical Engineering Department of the Kansas State Agricultural College, is making a test of gasoline engines to determine their availability for electric lighting as well as various mechanical purposes of the farm or business establishments. In a recent test a two-horse-power engine ran eighteen electric lights for ten hours without any attention.

Over twenty varieties of corn are being planted at the Hays Branch Experiment Station this year with a view to finding the varieties best adapted for western Kansas. It is felt that with more care in selecting for seed and with better cultivation it will be possible to greatly improve the corn crops in the western part of the State, not meeting the yields of eastern Kansas, but getting enough to make it profitable to have a small acreage of early maturing corn.

Only thirty-six Kansas counties have not had farmers' institutes this year. The Agricultural College will be glad to aid in reducing this number. Requests have come from many of these counties, but it has not been possible to reach them all this year. The counties in which institutes have not been held this year are: Geary, Wabaunsee, Wyandotte, Woodson, Neosho, Montgomery, Wilson, Chautauqua, Sedgwick, Barber, Pratt, Stafford, Barton, Kiowa, Comanche, Pawnee, Hodgeman, Ford, Clark, Meade, Gray, Lane, Finney, Haskell, Seward, Stevens, Grant, Kearney, Hamilton, Stanton, Morton, Rawlins, Cheyenne, Thomas, and Sherman.

Prof. E. A. Popenoe has begun to plan an energetic campaign against the San José Scale, found recently on many fruit-trees in and around Dodge City. The Agricultural College and Experiment Station Council has authorized Professor Popenoe to give great attention to the trees about Dodge City, and also to visit many other localities in the State to see if this most dangerous pest is at work elsewhere. He will go to Dodge City next week with spraying machinery and materials to see if comparatively mild remedies will succeed in killing the young scale now appearing, without injuring the trees. More drastic remedies will have to be applied next winter when the leaves are off. When trees are badly infested he recommends cutting the trees down and burning them, root and branch.

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Manhattan



Historical Society

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THE INDUSTRIALIST.

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Fertilizers for Corn.

As a rule I do not recommend the use of chemical fertilizers in growing corn when cheaper methods of increasing and maintaining the fertility of the soil may be used. When land has been cropped continuously with corn for a number of years and has become deficient in fertility, producing low yields, the best plan is to introduce a rotation of crops. Such land should be seeded to grasses or alfalfa for three or four years, or annual legume crops, such as cow-peas and soy-beans, may be used in rotation with corn with good results, or cow-peas may be planted in the corn at the last cultivation, and in this way much of the plant food taken from the soil with the corn crop may be returned to the land. In connection with crop rotation, make good use of all barnyard manure which is made on the farm, or if you do not have enough manure you may perhaps secure it from the neighboring towns.

As to what chemical fertilizer should be used for corn, this will depend somewhat upon the soil. Usually land which has been cropped continuously with corn for several years is exhausted in humus and nitrogen. These elements may be supplied by growing cow-peas, alfalfa and grasses, but if not supplied in this way it will be necessary in using chemical fertilizers to apply some fertilizer containing nitrogen, such as nitrate of soda, dried blood, or cottonseed-meal. Most Kansas soils are rich in the mineral elements of plant-food, especially in the element potash, but old lands apparently lack in available phosphoric acid. This may be supplied in the form of chemical fertilizers in bone meal or dissolved phosphate rock. If it is necessary to supply potash, use sulphate or muriate of potash, kainit or unleached wood ashes. Quoting from bulletin No. 55 of the Department of Agriculture of Pennsylvania: "A complete fertilizer for corn should, in order to supply the nitrogen necessary for a crop, contain 30 to 50 pounds of nitrate of soda, or 50 to 100 pounds of dried blood, or 75 to 150 pounds cottonseed-meal. To supply the phosphoric acid necessary for a corn crop would require 100 to 200 pounds bone meal, or 250 to 500 pounds dissolved rock phosphate. The necessary

potash would be contained in 60 to 100 pounds muriate of potash, or in 300 to 600 pounds of unleached wood ashes.

You should secure a report of the Kansas State Board of Agriculture, Vol. 23, No. 90. This report contains a copy of the laws regulating the sale and manufacture of commercial fertilizers in this State, and also contains information regarding the use of commercial fertilizers in an article prepared by Prof. J. T. Willard, chemist of this Station. The fertilizer companies licensed to sell fertilizers in Kansas are also named in this report.

I cannot quote prices of different grades of commercial fertilizers; the plant-food elements have a rather stable market value. For instance, in a recently published quotation nitrogen is quoted at 15 cents, phosphoric acid 7 cents, and potash 4½ cents per pound, respectively. The amounts of these different plant-food elements which a given fertilizer contains, will determine its value. In this State all fertilizers must be sold under a guaranteed analysis, which shows approximately how many pounds of each of the elements of plant-food is contained in 100 pounds of the fertilizer. Fertilizer companies licensed to sell fertilizers in the State, according to the report named above, are: Cudahy Packing Company, Armour Packing Company, Swift & Co., Kansas City, Kan.; Jacob Dold Packing Company, Wichita, Kan.; Mayer Fertilizer & Junk Co., St. Louis, Mo.

A. M. TEN EYCK.

The Value and Use of Barn-yard Manure.

The value of barn-yard manure may vary somewhat according to the kind of animals from which the manure is made, the quality, composition, and quantity of feeds fed, and the method of preserving or handling the manure previous to spreading it upon the fields. Manure from animals which are being fed with highly nutritious feeds will be richer in the plant-food elements than manure made from animals which are being fed on less nutritious feeds or which are being fed merely a maintenance ration.

I have computed the relative value of manure made by different animals, as published in Robert's "Fertility of the Land," as follows:

Horse manure.....	\$2.45 per ton.
Cow manure	2.20 per ton.
Sheep manure.....	4.20 per ton.
Pig manure	3.20 per ton.
Air-dry hen manure.....	8.50 per ton.

The value of mixed barn-yard manure varies greatly according to the different analyses made of the different samples of manure at different experiment stations. As an average for many samples barn-yard manure partly rotted contains in a thousand pounds of

manure 720 pounds of water, 58 pounds of ash, 5 pounds of nitrogen, 2.6 pounds of phosphoric acid, and 6.3 pounds of potash. As chemical fertilizers are sold on the market, the essential plant-food elements may be valued as follows: Nitrogen 15 cents, phosphoric acid 7 cents, potash 4.5 cents per pound, respectively. At this rate a ton of barn-yard manure having the composition given above will have a value of \$2.42. Professor Snyder, of the Minnesota Experiment Station, in discussing this subject has estimated the value of eight tons of farm manure, when applied to land deficient in fertility, at \$25.00. He makes this estimate in this way: The increase in yield of corn the first year after manuring will be twenty to twenty-five bushels per acre, or an increase of \$7.00 in the value of the crop. The second year after manuring the land will produce, according to his figures, six bushels more wheat per acre, valued at \$4.50. The third year, provided clover is seeded, the land will yield at least a ton more hay per acre, valued at \$5.00. Wheat following clover should give an increased yield of eight bushels per acre, worth \$6.00. The fifth year the estimated effect of the combined manure and clover treatment should increase the yield of oats twelve to fifteen bushels per acre, worth \$2.50, making a total increase of \$25.00 in the value of crops for five years.

No extensive experiments in the use of barn-yard manure have been carried on at the Kansas Experiment Station. The benefits derived from applying manure to corn land are so well understood that it has apparently not been considered necessary to prove it by experiment. Incidentally, however, along with our trial of varieties of corn in 1903, the same varieties were grown in different fields, one field having been manured during the previous winter while the other, similar in character of soil, received no manure. The manured land yielded, on the average, over eighteen bushels more corn per acre than the unmanured land. Some experiments were carried on in the early 90's at this Station in manuring land for wheat. In 1889-'90 land which had received twenty tons of manure per acre produced on the average five bushels more wheat per acre than the unmanured land; in 1891 the results were less favorable to the manuring. In a trial with fertilizers for wheat carried on at this Station in 1899 twenty-five tons of well-rotted manure gave better results than were secured from any kind of chemical fertilizer. The results of manuring wheat are not always beneficial, but there is no question that for other crops, such as corn, Kafir-corn, sorghum, and grasses, the application of manure results in a very profitable increase in the yield of the crop and at the same time helps to maintain the fertility of the soil.

There is no other land which can be manured so economically as grass land, and there are no crops which respond more quickly and fully to the application of manure than do grasses, either meadow or pasture. It has been found, also, that alfalfa responds well to surface dressing of barn-yard manure, and manure may be hauled on grass land or on alfalfa almost any time during the fall or winter, the season of the year when the farmer has the most spare time.

A. M. TEN EYCK.

The Value of Corn Cobs.

A correspondent asks concerning the fertilizing value of corn-cobs. He states that he can secure a large quantity of the cobs at ten cents per load and wants to know whether it will pay to haul the cobs and spread on the land and plow under as a fertilizer.

Corn-cobs will have a very small value as a fertilizer compared with other crop by-products, such as straw or stalks of corn, cane or Kafir-corn, and farmers could well afford to pay one dollar a load for good barn-yard manure for fertilizer rather than ten cents a load for corn-cobs. In the following table I have shown the number of pounds of fertilizing constituents together with water and ash which may be found in one thousand pounds of the substances named in their ordinary air-dry condition.

Material.	Water, lbs.	Ash, lbs.	Nitro- gen, lbs.	Phos- phoric acid, lbs.	Pot- ash, lbs.
Barn-yard manure (partly rotted)	750	58.0	5.0	2.6	6.3
Wheat straw.....	143	46.0	4.8	2.2	6.3
Corn-cobs.....	120	13.0	2.0	0.4	6.8
Corn-stalks (without leaves).....	150	13.5	4.0	0.5	6.3
Corn-stalks (with leaves and husks)	150	45.3	4.8	3.8	16.4

The figures given above for the composition of corn-cobs and corn-stalks (without leaves) were calculated from the analyses given in Professor Snyder's "Chemistry of Plant and Animal Life." The other figures for the composition of manure, wheat straw and corn-stalks are published in Professor Robert's "Fertility of the Land." It will be observed that while the barn-yard manure, as it is ordinarily hauled, contains three-fourths of its weight in water, yet it is richer in the plant-food elements, nitrogen, phosphoric acid and potash, than any of the materials named except corn-stalks (with leaves and husks.)

As chemical fertilizers are sold on the market the essential plant-food elements may be valued as follows: nitrogen, 15 cents; phosphoric acid, 7 cents; and potash, 4.5 cents per pound, respectively. At this rate, calculating the value of the plant-food elements in the different materials as given in the above table, we

find that a ton of barn-yard manure will have a value of \$2.42; a ton of wheat straw is worth \$2.30; a ton of corn-cobs, \$1.36; a ton of corn-stalks without leaves, \$1.83; while a ton of corn-stalks with leaves and husks would have a fertilizing value of \$3.46. The corn-stalks as left on the field after pasturing with cattle have, therefore, probably more fertilizing value than corn-cobs. Not only are corn-cobs very deficient in the essential plant-food elements, but their woody texture would make them undesirable as a fertilizer since the cobs would decay slowly and interfere more or less with the tillage and proper cultivation of the soil.

Corn-cobs have a much greater value for fuel than they have as fertilizers. Eighty-five per cent of the corn-cob is composed of carbonaceous matter; air-dry cobs actually contain forty per cent carbon and five per cent hydrogen; dry, hard wood contains about fifty per cent of carbon and about six per cent of hydrogen; thus, corn-cobs will have a fuel value nearly equal to that of wood, pound for pound. A cord of dry, hard wood weighs from 4500 to 5000 pounds; a double wagon-box full of corn-cobs will weigh in the neighborhood of 1000 pounds; thus, six loads or three tons of corn-cobs would be equivalent to a cord of hard wood in fuel value. If wood is worth \$6.00 per cord, corn-cobs would have a fuel value of \$2.00 per ton. Again, we find that the potash is the most valuable fertilizing constituent in corn cobs; more than fifty per cent of the ashes of corn-cobs is potash. The corn-cobs could be used as fuel and the ashes spread over the fields, when the fertilizing effect would be nearly as great and the results much quicker obtained than if the corn-cobs were used directly for fertilizing. It would require from 65 to 70 tons of cobs to make one ton of ashes when the cobs are burned, but this ton of ashes would contain more than 1000 pounds of pure potash—sufficient to fertilize 20 acres of land if the ashes are as carefully distributed as a chemical fertilizer would be.

Another valuable use of corn-cobs is to char them and feed the charcoal to the poultry and hogs; hogs and poultry relish charred cobs very much, and the charcoal appears to be a healthful tonic or medicine which helps to keep the fowls or animals in good condition. A plan which I have heard recommended for charring cobs is to place them in rather small piles and set fire to the cobs and, when the cobs are all on fire and red throughout the pile, put out the fire quickly by throwing on water; the charred remains of the cobs may be crushed and fed to stock, mixed with their feed, or the charcoal will be readily eaten by

poultry and also by hogs if placed in open troughs or boxes in the hog-pen or poultry-yard.

At this Station most of the corn which is fed to the stock is shelled and ground and we have no difficulty in disposing of the cobs for fuel purposes to the residents of Manhattan at \$1.00 per double wagon-box load.

A. M. TEN EYCK.

The Kansas Agricultural College and Summer Picnics.

The College believes in summer picnics and has for many years been responding favorably to most calls made upon it for speakers for picnics, summer institutes, old settlers' meetings, etc. Much of the service contributed by the College has been helpful to the cause of agriculture, but for the most part it has had little value because the educational and the amusement features were not kept distinct and separate, the amusements taking the whole time and rendering public speaking almost impossible and valueless because not heard. When institutes are held in the fall or winter there is not much need of combining the institute and picnic unless special effort be made to reach the young people.

This year, therefore, the College will be disposed to decline invitations to send speakers to summer meetings unless the educational and amusement features be treated exactly alike. It does not tend to raise the dignity of agriculture in the minds of young people to let the merry-go-round and striking machine and the lemonade sellers work in opposition to a lecture on agriculture. Don't cut out the amusement features by any means. The College believes in picnics for the young people, with lots of fun, but it also believes that the young people ought to hear lectures on scientific agriculture. Give each its own share of time and make contracts with all who furnish amusements and refreshments with a definite understanding as to their share of the time.

Let these features begin as early as the managers desire, but have them stop absolutely from 10:30 to 11:30 A. M. for the educational program. Then they should have all the time from 11:30 to 2:30, when they should stop again for one hour. The young people, and the old folks too, are thus given ample time for the social side of the day, and all should be urged to attend the lectures. Then the speakers, whether from the College or elsewhere, should prepare lectures that would interest the young people in life on the farm. The managers of these picnics usually fail to have enough seats for the crowd. They say, "the people won't sit down to listen to a lecture." Then don't have a lecture. But if you do have a lecture, prepare enough seats and make it possible for the lecturer

to be heard, and assume that all your people want to hear, and then insist on good order. Then be prompt. Treat the amusement managers and the young people fairly and begin the educational part of your program exactly on time, giving five minutes warning by proclamation. Dismiss this part of the program on time, even if you have to ask the field marshal to arrest the speaker and take him off the platform.

The College is willing to help, but the picnic people should give the cause of agriculture its proper place and a "square deal." Correspondence relative to all summer meetings is now in order.

J. H. MILLER,
Field Secretary, K. S. A. C.

MANHATTAN, April 30, '06.

Horticulture at the Kansas State Agricultural College.

The problems which confront the grower of vegetables and fruits are fully as important to the men who grow these crops and to the consumers of them as are questions concerning the production of cereals or the feeding of stock.

The application of manures and fertilizers is always practiced by the truck and fruit growers in a community long before the grain farmer realizes that manures are valuable. The value of vegetable and fruit crops warrants a more liberal use of manures and commercial fertilizers than the grower of cereals or fodders could afford. The cost of growing a poor crop of celery or strawberries is nearly as great as of growing a heavy crop, and the investment in fertilizers is expected to give large returns.

The Horticultural Department of the Kansas Experiment Station is working on a number of these problems. For a number of years the yield of sweet-potatoes in the districts of Kansas where this crop is extensively grown has been decreasing. A better stand has been secured on soils that have grown one or more crops of "sweets" than on soils that have been growing corn or fodder crops, and the cost of production has been less; but the continued use of the land for this one crop is telling on the yield, and a number of experiments are to be continued the coming season. The work is done for the most part in coöperation with men who have good sweet-potato soils that have been giving inferior yields.

Combinations of fertilizers containing varying proportions of nitrogen, phosphorus, and potash will be used. The method of application will vary, some being sown on the land, some drilled in, and some applied directly to the row.

Barn-yard manures in varying quantity, from five tons to twenty tons per acre, with and without the commercial compounds, will

be tested, and wood ashes in amounts varying from three hundred to one thousand pounds per acre will be included in some of the tests.

Fertilizer tests with Irish potatoes, tomatoes, and other vegetables and with small fruits are under observation. The prevention of potato blight by use of Bordeaux mixture has so far given satisfactory results and will be continued. Prevention of brown rot of peach and plum by use of Bordeaux was begun before the buds opened. This will be followed by another spray as soon as the leaves are well grown. The peach leaves are more delicate than are the leaves of most tree fruits and the solutions used on peach must be diluted one-half.

The battle with the codling moth is commencing. The great part of the work will be done with arsenate of lead (three pounds to fifty gallons of water) and Bordeaux mixture, in varying strength from the "standard" (six pounds copper sulphate, four pounds of lime, to fifty gallons of water) to one-third strength will be tested. The set of fruit on the experimental plots testing the comparative value of winter and summer pruning seems to favor the summer work.

The "Farmers' Garden" experiment begun last year is even more interesting to the city man with small space, as the plot fifty by fifty feet is about equal to the end of a city lot. Last year's garden made the following yields, which were secured in succession from early spring until late fall, much of the land producing three crops and all of it two crops: Lettuce, 195 pounds; radishes, 134 pounds; onions, 325 pounds; peas, 141 pounds; string beans, 101 pounds; beets, 148 pounds; cabbage, 450 pounds; cucumbers, 184 pounds; spinach, 148 pounds; tomatoes, 575 pounds; peppers, 5 pounds; squash, 337 pounds; parsnips, 28 pounds; carrots, 15 pounds; turnips, 75 pounds; green corn, 491 ears; eggplants 24.

For most of the vegetables the rows were eighteen inches apart; corn and cabbage were three feet apart. There was not a day after the first radishes were of table size, which was twenty-one days after planting, until heavy frosts occurred but that fresh vegetables were ready for use.

ALBERT DICKENS.

The annual government inspection of the cadet corps was made Tuesday afternoon by Major Mann, of the general staff, Washington, D. C. The cadets, under command of Capt. P. M. Shaffer, made a good showing and the inspector was well pleased. He said that the band was the best equipped college band in the United States.

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Local Notes.

The last number of the *Kansas Farmer* contains a good half-tone of Prof. J. T. Willard, of this College.

Prof. Oscar Erf, of the Dairy Department, lectured on Tuesday evening, May 1, to the students of Haskell Institute, Lawrence, on dairying.

Lawrence Brink, the oldest son of Professor Brink, of this College, will graduate in June from the classical course of the University of Rochester, New York.

Miss Gertrude Brink, daughter of Professor and Mrs. Brink, has been dangerously ill with pneumonia for the past two weeks. The last reports are that she is getting better.

The ponderous cement concrete foundation for the new smoke-stack of the heating plant is nearly completed. Work on the square stone part of the shaft will begin this week.

J. M. Cooke, a dairy short-course student, left this week for Omaha, Neb., to accept a position with the Almito Creamery Company, as superintendent of the bottling department.

Professor Walters is drawing plans for a new addition to the power-house. The addition will contain an office for the engineer, a lavatory, a pipe-cutting shop, and a storeroom, and will be built during the summer.

The last number of the *Students' Herald* was edited by the junior class. It is literally a red-letter number, being printed in red ink. The contents are well gotten up and the frontispiece, drawn by P. H. Skinner, of the architectural course, is neat and appropriate.

The INDUSTRIALIST congratulates Regent E. T. Fairchild, of this College, on his recent nomination by the republican State convention for the office of Superintendent of Public Instruction. The selection is a good one, and the professor may consider himself elected.

The College print-shop, under the superintendency of J. D. Rickman, does a large amount of work. One of the big jobs he is working on now is a 64-page agricultural bulletin, twenty-five thousand being run. Something like 125,000 impressions on a cylinder press is quite a job for an office equipped as is the College print-shop. Besides, the office prints two weekly and one monthly paper and practically all the job work required at the College. Mr. Rickman is doing splendidly with the room and equipment he has charge of, but to our mind the equipment should be doubled and a suitable building provided. A linotype wouldn't be too good for the office. Stereotyping and engraving departments

should be added. When we consider the fact that more young men attend the State Agricultural College than any other college in the State, and many of them want to learn the printers' trade, we believe the opportunity should be given them to learn the trade in a thoroughly equipped office.—*Oberlin Herald*.

Professor McKeever seems to be in demand as a school commencement orator. He has already been engaged to deliver addresses at Ellsworth and Salina and at the county high-school commencement at Oskaloosa, while several other schools are waiting for his consent to place him on the program.

Forty-five of the juniors and seniors of the domestic science course and six or eight members of the architectural course will go to Topeka on Monday, May 7. The young women, in charge of Prof. Henrietta W. Calvin, will visit the hospitals to study nursing and diatetics, and the young men, in charge of Prof. J. D. Walters, will spend the day in the rooms and halls of the State capitol to study its architecture and decoration.

Prof. C. C. Geogeson, formerly of this College, writes from the Government Experiment Station at Sitka, Alaska, that he has procured a small selected herd of Galloway cattle, picked from the best stock of the Middle West, for acclimatization in that Territory. Part of the herd will be sent to Wood island and the balance to Kenai, about eighty miles from Saldovia, where there is a station under the charge of P. H. Ross. At these points experiments will be made in in-breeding and cross breeding with native cattle with a view to securing an animal that will prove a good milker and yet stand the climate. With four large breeding stations at Sitka, Kenai, Copper Center, and Rampart, the government will be well equipped to provide nuclei for local herds, and the settlers in the Alaskan country will be encouraged to give the animals a trial in the hope that eventually they will be able to provide their own dairy products and not be dependent upon canned supplies, as at present.

The annual interclass track meet was held at the Athletic Park Monday afternoon. Owing to a heavy track and soft ground few records were broken. The seniors and freshmen tied for first place, with 48 points each. The juniors won 23 and the sophomores 14 points. The attendance was all that could be expected considering the roads and the threatening weather. The records made are as follows: 100-yard dash, tied by Cain and Edelblute, time, $10\frac{3}{5}$ seconds; pole vault, tied by Watkins and Oskins, $9\frac{4}{10}$ feet; 16-pound shot put, Seng, $34\frac{8}{10}$ feet; 1-mile run, Milligan, 4 minutes $52\frac{1}{5}$ seconds; broad jump, Watkins, $18\frac{8}{10}$ feet; 220-yard dash, Cain, $24\frac{2}{5}$ seconds; 120-yard hurdle, Schrader, $20\frac{3}{5}$ seconds; 16-pound hammer throw, Seng, 88 feet; 440-yard dash, Milligan, 55 seconds; running high jump, Watkins, 5.3 feet; one-half mile run, Thurston, 2 minutes, $16\frac{1}{2}$ seconds; discus throw, Seng, 97.2 feet; 220 hurdle, Carr, $30\frac{1}{2}$ seconds; 2-mile run, Bealey, 11 minutes, $52\frac{2}{5}$ seconds; 1-mile relay (team), Carr, Nyberg, Edelblute and Milligan.

Dr. Hugo DeVries, professor of botany in the University of Amsterdam, in Holland, is visiting with Professor and Mrs. Roberts. Professor DeVries is well known in biological circles as the discoverer of mutation in plants and as the author of "The Theory of Mutation." He is especially interested in plant breeding in American experiment stations, and while in this country is engaged to deliver a course of lectures at the University of California.

The following letter was received recently by Secretary McLean, of the College Y. M. C. A.: "Your favor referring to the Y. M. C. A. at the Agricultural College duly received. I take pleasure in handing you herewith my personal check for \$100.00 on this account. I regard the Y. M. C. A. as one of the greatest and most valuable institutions that has ever been organized in the interests of the young men of our State and nation. It improves the mental, moral, spiritual and physical condition of men, and reaches all classes. I have never been associated in any way with any work which was so interesting and attractive to me as the Y. M. C. A. Yours very respectfully, W. R. Stubbs."

Alumni and Former Students.

Hope Brady, '98, is at home in Manhattan, after another year of teaching in the Liberal, Kan., schools.

Gardiner Obrecht was born April 30, in Urbana, Ill., and gladdens the hearts of Maud (Gardiner) Obrecht, '93, and her husband.

Junie Parks, '98, and Lela Parks, sophomore in 1899, have returned to their home in Hominy, Okla., after teaching for the last school year in Riley county.

Mark Wheeler, '97, and Jennette (Carpenter) Wheeler, junior in 1897, are the parents of a Filipino, born March 7, who will be known as Robert Carpenter Wheeler.

Emma (Haines) Bowen, '67, and her daughter May (Bowen) Schoonover, '96, will spend most of the summer at the old home in Manhattan, arriving before Commencement. Mr. Schoonover has been appointed to a fellowship in Latin in the University of Chicago for the next year.

Miss Bess Little, '91, who for four years has been teaching physical culture in Bryn Mawr and taking a medical course in Philadelphia, will receive her M. D. in May. After graduation she will fill a position for one year as interne in the New England Hospital in Boston.—*Jayhawker.*

Elmyra (Harrison) Brown, who will be remembered as a special student in 1898, and her niece, Miss Leta Harrison, were in San Francisco at the time of the great earthquake, and barely escaped from their hotel before it burned, carrying with them only their most valuable personal effects. They were assisted across the bay and reached Salt Lake in safety, where they were met by Mr. Brown.

Press Notices.

Attention is called to an article in another place in this issue, entitled "Horticulture at the Kansas State Agricultural College." The article has much value to growers of vegetables and fruits.

The Hays Branch of the Kansas Experiment Station has 450 acres of winter and spring wheat, and most of it looks well. It is hoped to have considerable seed wheat for distribution among the farmers in western Kansas at a small margin above the market price, to pay for extra cleaning and other extra labor.

Twenty varieties of alfalfa, gathered from as many parts of the world, have been sent to the Kansas State Agricultural College by the United States Department of Agriculture for careful variety tests on one-tenth acre plots. So far the common alfalfa has been successful in every county in Kansas where carefully seeded.

Professor Dickens, of the Department of Horticulture of the Kansas State Agricultural College, is carrying on several coöperative tests about Manhattan with fertilizers for sweet-potato fields, using varying amounts of commercial fertilizers on some plots and varying amounts of barn-yard manure on others.

Several of the county high schools of Kansas will introduce elementary agriculture into their courses of study next year. Many states—Nebraska, Wisconsin, Indiana and others—now have the subject in the curriculum of the rural schools. Kansas should not be too far in the rear in the recognition of this all-important subject.

The Horticultural Department of the Kansas State Agricultural College will carry on some coöperative spraying experiments in the big orchards about Hutchinson. Professor Dickens will probably spend ten days there supervising the work, and Professor Popenoe, of the Department of Entomology, will also give a week to that territory. This is the kind of work the Kansas Experiment Station men are being called upon to do all over the State.

The Dairy Department of the Kansas State Agricultural College is at work now on a problem of great interest to farmers—trying to find out what makes the differences in amount of butter fat in cream on different days. The work is starting on six lines: (1) Speed of separator, (2) rate of inflow into bowl, (3) adjustment of cream screw, (4) amount of water used in flushing, (5) temperature of milk at time of separating, and (6) freshness of milk. The result will be reported in a few weeks.

The constantly increasing acreage of alfalfa, and the high price of seed makes purity and germinability of the latter of the highest importance. Bulletin No. 133, just issued by the Agricultural Experiment Station, Manhattan, Kan., treats of alfalfa seed and the various impurities and defects to which it is liable. The methods of testing available to farmers and seedmen, and more elaborate ones practiced at the Station are described in detail. The bulletin is lavishly illustrated and may be obtained free on application.

The Agricultural Department of the Kansas State Agricultural College will experiment on six or eight varieties of broom-corn this year. Some breeding experiments have been in progress for three years with a view to getting a longer brush and a shorter center stem, and at the same time a finer quality of brush. The same experiments will be carried on at the Hays Station, the product from the Manhattan Station being made up into brooms and the product from Hays sold on the market. Both the Dwarf and Standard will be planted, the former being made the market product at Hays and the latter at Manhattan.

The Kansas State Agricultural College, through its Farmers' Institute Department, has conducted or assisted in holding, one hundred thirty-two institutes since September 1, 1905. Institutes have been held in sixty-nine counties and seventy new institutes, local and county, have been organized. In addition to these regular institutes the College, through the courtesy and wisdom of the Rock Island railroad, conducted a series of meetings over that entire railway system in Kansas, stopping in twelve days at one hundred and forty stations. Over one hundred lectures were given on "Corn Breeding" and "Wheat Culture," the speakers being Professors Willard and Ten Eyck and Mr. Shoesmith and President Nichols. Also, the College assisted the Industrial Department of the Missouri Pacific railway in a series of meetings recently on its southern lines in Kansas, although no institutes were organized.

Kansas State Agricultural College Weather Report for April, 1906.

With the exception of a temperature several degrees above normal, the weather conditions for the month were those of the average April.

The mean temperature for the month was 59.50° , or 5.2° above normal, and has been exceeded only three times in the past 47 years.

The mean maximum temperature was 73.7° , the mean minimum temperature, 45.4° . The highest temperature was 92° on the 24th, the lowest 29° on the 15th.

The rainfall for the month was 2.26 inches, or .39 inches below the average monthly rainfall.

There were 17 clear, 5 partly clear, and 8 cloudy days.

The total run of wind for the month was 7943 miles, which was an average of 231 miles per day. The highest for 24 hours was 471 miles on the 24th, the record showing 41 miles per hour between 2 and 3 P. M.

The wind direction was unusually changeable, showing an easterly direction for the month. Hail fell on 30th.

There was a light frost on the 6th. Frost and ice on the 15th did no damage to fruit and early garden. Peaches were in bloom by the 13th and all fruits give promise of a bountiful crop.

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College year begins September 20, 1906. Examination for ad-
mission, September 19, at 9 a.m.

Catalogue or other information free, address

E. R. Nichols, President
Manhattan, -- Kansas

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THE INDUSTRIALIST.

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MANHATTAN, KAN., MAY 12, 1906.

No. 33

Rotation of Crops.

In order to maintain soil fertility, and at the same time make the greatest profit in farming, a practical and scientific rotation of crops should include the following:

1. Grasses and perennial legumes.
2. Pasture, with an addition of manure one or two years previous to breaking the sod.
3. Cultivated crops.
4. Small grain crops, plus green manuring crops planted in the stubble after harvest.

Small grain crops must be grown on every farm. Often they are the greatest money-making crops, hence they must be given a prominent place in the general crop-rotation system. Cultivated crops are often the money-making crops of the farm, also, and they are necessary in every rotation plan in order that the land may be cleared of weeds. Especially is this true in a locality where small grain is the main crop. By continuous grain growing land becomes foul and weedy, and the cultivated crop in rotation is necessary in order to destroy the weeds. Cultivation conserves the soil moisture and develops the fertility of the soil, increasing the supply of available plant-food by producing those conditions which favor chemical change, the growth of soil bacteria, and the decay of vegetable matter.

Grasses and legumes maintain the supply of soil nitrogen and restore the proper soil texture; besides, they are profitable crops, and in fact absolutely necessary on every farm upon which live stock is kept. Pasture must be had on every farm, and it is quite essential that it be made part of the regular crop rotation. Many soils become too light and mellow by continuous cropping and need the tramping of stock to firm them. Much more grass can be produced when the pastures are kept fresh and new, and the increase of fertility and improvement of soil texture result in larger crops of corn and grain when the meadow is broken and planted again to these crops.

A convenient and desirable time to manure land is while it is being used as meadow or pasture. If the manure is applied a

year or so before breaking it will stimulate the growth of grass and cause a greater production of hay or pasture. Meanwhile the soil is enriched by an increased root growth and the formation of more humus. Besides these beneficial results, some plant-food will be supplied by the manuring for the use of the first crop which is grown on the breaking, at a time when available plant-food is much needed, because the larger part of the fertility in new breaking is in an unavailable condition and cannot readily be used by the new crop.

Soils in which the organic matter and humus are deficient may be improved in fertility and texture by green manuring. A cheap and practical method of green manuring is to plant a crop adapted for this purpose (the annual legume crops, such as cow-peas, soy-beans, field peas and vetches being preferred) in the grain stubble immediately after harvest. The method at the Kansas Experiment Station is to follow the binder directly with the drill; thus when the harvest is finished the field has been replanted. Cow-peas, rape or sorghum seeded in this way usually make a good stand and excellent growth and furnish forage or pasture, or the crop may be plowed down for green manure, or left as a winter cover.

It is necessary in carrying out permanent plans for crop rotation to have fields of nearly equal area in order to grow about the same acreage of the several crops each year, thus making it possible to keep a certain amount of live stock and have from year to year regularity and uniformity in the farming business.

In order to demonstrate the carrying out of practical systems of crop rotation, as mentioned above, assume for illustration a farm of 160 acres, divided into eight equal fields, as shown in the diagrams:

ROTATION No. 1.

The farm plan showing crops on all fields for one year.

Legumes and Forage.	Wheat.
Wheat.	Wheat.
Wheat plus Legumes.	Pasture (manured).
Spring grains (Seed to grass).	Clover and Grasses.

Rotation plan or order of crops on each field.

- 1st year.....Grass and Clover.
- 2d year.....Pasture (manured).
- 3d year.....Wheat.
- 4th year.....Wheat.
- 5th year.....Legumes and Forage.
- 6th year.....Wheat.
- 7th year.....Wheat plus Legumes.
- 8th year.....Spring grains (seed to grass).

It will be observed that the crops growing on the eight fields each year are the same as the "order of crops on each field in eight years." By successfully carrying out the above plan of rotation on a 160-acre farm the farmer will raise each year 80 acres of wheat; 40 acres of grass, 20 of which may be used for pasture; 20 acres of small grains other than wheat; and 20 acres of forage crops, part at least consisting of annual legume crops. Each year 20 acres of grass land is given a dressing of manure, and a 20-acre field in wheat is renewed in fertility by a crop of cow-peas or other green manuring crop planted after the wheat is harvested. Meanwhile, once in eight years the whole farm will have been seeded to grass and clover, each field remaining in grass two years.

This rotation is adapted to a wheat-growing country and the money crop, wheat, is grown upon one-half of the farm each year, while the other half of the farm is kept in crops which have more or less of a renovating effect upon the land, and which may be turned into money indirectly by feeding them to live stock on the farm. In a corn country, corn may be substituted in place of wheat in the above rotation.

If this system of rotation does not leave the land in grass long enough the farm may be divided and the following systems of rotation practiced on each division of four fields for eight years, when the systems may be interchanged, the first taking the place of the second, and the second of the first, as follows:

No. 1 A.

Rotation plan or order of crops on each field.

1st year.....	Grass.
2d year.....	Grass.
3d year.....	Pasture plus manure.
4th year.....	Pasture plus manure.
5th year.....	Wheat.
6th year.....	Wheat.
7th year.....	Wheat.
8th year.....	Wheat.

No. 1 B.

Rotation plan or order of crops on each field.

1st year.....	Legumes and forage.
2d year.....	Wheat.
3d year.....	Wheat plus legumes.
4th year.....	Spring grains.
5th year.....	Legumes and forage.
6th year.....	Wheat.
7th year.....	Wheat plus legumes.
8th year.....	Spring grains (seed to grass).

It will be observed that this is really a double eight-year rotation, or in fact a sixteen-year rotation; that is, keeping each of the fields in grass four years at a time requires that one field be seeded to grass every two years and that one grass field be plowed up every two years and planted again to wheat, requiring sixteen years before the whole farm shall have received a rotation with grass.

ROTATION PLAN NO. 2.

The farm plan showing crops on all fields for one year.

Corn.	Corn.
Small grains (seed to alfalfa in fall).	Corn.
Alfalfa (manured).	Alfalfa.
Alfalfa (manured).	Alfalfa.

Rotation plan or order of crops
on each field.

- 1st year.....Alfalfa.
- 2d year.....Alfalfa.
- 3d year.....Alfalfa plus manure.
- 4th year.....Alfalfa plus manure.
- 5th year.....Corn.
- 6th year.....Corn.
- 7th year.....Corn.
- 8th year.....Small grains (seed to
alfalfa in fall).

If the above plan keeps too much land in alfalfa, the farm may be divided and the following systems of rotation practiced on each division of four fields for eight years, when the systems may be interchanged, the first taking the place of the second, and the second of the first, as follows:

No. 2 A.

Rotation plan or order of crops on
each field.

- 1st year.....Alfalfa.
- 2d year.....Alfalfa.
- 3d year.....Alfalfa plus manure.
- 4th year.....Alfalfa plus manure.
- 5th year.....Corn.
- 6th year.....Corn.
- 7th year.....Corn.
- 8th year.....Corn.

No. 2 B.

Rotation Plan or Order of crops on
each field.

- 1st year....Legumes and forage.
- 2d year....Corn.
- 3d year....Corn plus manure.
- 4th year....Spring grains.
- 5th year....Legumes and forage.
- 6th year....Corn.
- 7th year....Corn plus manure.
- 8th year....Spring grains (seed to
alfalfa).

It may be desirable to grow grass as well as alfalfa on the same farm in order to supply pasture for cattle and hay for horses, etc. If this is desirable then the alfalfa rotation plan may be slightly changed and a third system introduced, making a double eight-year or a sixteen-year rotation, as follows:

No. 2 C.

Rotation plan or order of crops on
each field.

- 1st year.....Alfalfa.
- 2d year.....Alfalfa.
- 3d year.....Alfalfa plus manure.
- 4th year.....Alfalfa plus manure.
- 5th year.....Corn.
- 6th year.....Corn.
- 7th year.....Small grains.
- 8th year.....Small grains (seed to
grass.)

No. 2 D.

Rotation plan or order of crops on
each field.

- 1st year.....Grass.
- 2d year.....Grass.
- 3d year.....Pasture plus manure.
- 4th year.....Pasture plus manure.
- 5th year.....Corn.
- 6th year.....Corn.
- 7th year.....Small grains.
- 8th year.....Small grains (seed to
alfalfa.)

THE INDUSTRIALIST.

A Rotation on Eight Fields with Alfalfa, Grass, Corn and Small Grain, Being an Exhibit of Rotation Plans Nos. 2 C and 2 D.

YEAR.	Field 1.	Field 2.	Field 3.	Field 4.	Field 5.	Field 6.	Field 7.	Field 8.
1906.....	Small grain. (S A)	Corn. (M)	Corn.	Corn.	Small grain. (S G)	Corn. (M)	Corn.	Corn.
1907.....	Alfalfa.	Small grain.	Corn.	Corn.	Grass meadow.	Small grain. (S G)	Corn. (M)	Corn.
1908.....	Alfalfa.	Small grain. (S A)	Corn. (M)	Corn. (M)	Grass meadow. (M)	Grass meadow.	Small grain.	Corn.
1909.....	Alfalfa. (M)	Alfalfa.	Small grain. (S A)	Corn.	Meadow or pas- ture. (B)	Grass meadow.	Small grain. (S G)	Corn. (M)
1910.....	Alfalfa. (B)	Alfalfa.	Small grain. (S A)	Corn. (M)	Corn.	Meadow or pas- ture. (M)	Grass meadow.	Small grain.
1911.....	Corn.	Alfalfa. (M)	Small grain.	Corn. (M)	Meadow or pas- ture. (B)	Grass meadow.	Small grain. (S G)	Corn.
1912.....	Corn. (M)	Alfalfa. (B)	Small grain. (S A)	Corn.	Meadow or pas- ture. (B)	Grass meadow.	Small grain.	Corn.
1913.....	Small grain.	Corn.	Alfalfa. (M)	Corn. (M)	Meadow or pas- ture. (B)	Grass meadow.	Small grain.	Corn.
1914.....	Small grain. (S G)	Corn. (M)	Alfalfa.	Corn.	Meadow or pas- ture. (M)	Grass meadow.	Small grain.	Corn.
1915.....	Grass Meadow.	Small grain.	Corn.	Alfalfa. (M)	Meadow or pas- ture. (B)	Grass meadow.	Small grain.	Corn.
1916.....	Grass Meadow.	Small grain. (S G)	Corn. (M)	Alfalfa. (B)	Alfalfa. (M)	Grass meadow.	Small grain.	Corn.
1917.....	Meadow or pasture. (M).	Grass Meadow.	Small grain.	Corn.	Alfalfa. (B)	Grass meadow.	Small grain.	Corn.
1918.....	Meadow or pasture. (B)	Grass Meadow.	Small grain. (S G)	Corn. (M)	Alfalfa. (M)	Grass meadow.	Small grain.	Corn.
1919.....	Corn.	Meadow or pasture. (M)	Grass meadow.	Small grain.	Alfalfa. (B)	Grass meadow.	Small grain.	Corn.
1920.....	Corn. (M)	Meadow or pasture. (B)	Grass meadow. (S G)	Small grain.	Corn. (M)	Alfalfa. (M)	Alfalfa.	Alfalfa.
1921.....	Small grain.	Corn.	Meadow or pasture. (M)	Small grain.	Grass meadow. (S G)	Corn. (M)	Alfalfa. (B)	Alfalfa. (M)
1922.....	Small grain. (S A)	Corn. (M)	Meadow or pasture. (B)	Grass meadow.	Meadow grass.	Small grain.	Corn.	Alfalfa. (B)
1923.....	Alfalfa.	Small grain.	Corn.	Meadow or pasture. (M)	Grass meadow. (S G)	Small grain. (S G)	Corn. (M)	Alfalfa. (B)
1924.....	Alfalfa.	Small grain. (S A)	Corn. (M)	Meadow or pasture. (B)	Grass meadow. (M)	Small grain.	Corn.	Corn.

(M) = Manured. (B) = Break sod either in fall or spring. (S A) = Seed to alfalfa, this may be done in the fall and a catch of alfalfa secured without loosing a crop. (S G) = Seed to grass, which may also be done in the fall in the west and south, and in the spring in the central and eastern states.

This rotation of crops is only well adapted to a farm which carries a large amount of live stock. It will be observed that four fields, or one half of the farm, is always in alfalfa or grass, but occasionally there may be only one field in alfalfa and three in grass, or *vice versa*; this is the result of the arrangement by which the seeding and breaking of grass and alfalfa sod is made to come alternate years in order to distribute the work evenly from year to year. There will always be two fields of corn and two fields of small grain, although if it were preferable, corn or some other crop might be grown instead of small grain, on one of these fields each year previous to the year in which the land is seeded down, and not interfere at all with the regular system of rotation.

With this plan of rotation successfully carried out each of the eight fields in the farm will have been in alfalfa four years and in grass four years at the end of sixteen years of cropping, and during this period the whole farm will have been manured twice. Meanwhile four fields have produced, each year, large crops of corn and grain, and there is little question but that a farm thus managed may be even more fertile at the end of the sixteen years than it was at the beginning.

ROTATION PLAN NO. 3.

The farm plan showing crops on all fields for one year.

Grass.	Corn.
Pasture (manured).	Small grain.
Corn plus legumes.	Wheat (Seed to grass).

Rotation plan or order of crops on each field.

- 1st year.....Grass.
- 2d year.....Pasture (manured).
- 3d year.....Corn plus legumes.
- 4th year.....Córn.
- 5th year.....Small grain.
- 6th year.....Wheat (seed to grass).

The above is a six-year rotation and cannot be well adapted to eight fields, but it is given to show how crops may be arranged for a smaller number of fields.

ROTATION PLAN No. 4.

A Sixteen-year Rotation with Alfalfa, Small Grain and Corn on Four Fields.

YEAR.	Field A.	Field B.	Field C.	Field D.
1906.....	Small grain. (S)	Corn.	Corn. (M)	Corn.
1907.....	Alfalfa. (M)	Small grain. (CC)	Corn.	Corn.
1908.....	Alfalfa.	Corn. (M)	Small grain. (CC)	Corn.
1909.....	Alfalfa.	Corn.	Corn. (M)	Small grain. (CC)
1910.....	Alfalfa. (B)	Small grain. (S)	Corn.	Corn. (M)
1911.....	Corn.	Alfalfa. (M)	Small grain. (CC)	Corn.
1912.....	Corn.	Alfalfa.	Corn. (M)	Small grain. (CC)
1913.....	Small grain. (CC)	Alfalfa.	Corn.	Corn. (M)
1914.....	Corn. (M)	Alfalfa. (B)	Small Grain. (S)	Corn.
1915.....	Corn.	Corn.	Alfalfa. (M)	Small grain. (CC)
1916.....	Small grain. (CC)	Corn.	Alfalfa.	Corn. (M)
1917.....	Corn. (M)	Small grain. (CC)	Alfalfa.	Corn.
1918.....	Corn.	Corn. (M)	Alfalfa. (B)	Small grain. (S)
1919.....	Small grain. (CC)	Corn.	Corn.	Alfalfa. (M)
1920.....	Corn. (M)	Small grain. (CC)	Corn.	Alfalfa.
1921.....	Corn.	Corn. (M)	Small grain. (CC)	Alfalfa.
1922.....	Small grain. (S)	Corn.	Corn. (M)	Alfalfa. (B)
1923+.....	Alfalfa. (M)	Small grain. (CC)	Corn.	Corn.

*It is assumed that this farm has been cropped largely with corn and small grains and has received little rotation of crops. No alfalfa is growing on the farm in 1906, when field "A" is seeded. The rotation really begins in 1907.

[†]Observe that this is a repetition of 1907 crops: *viz.*, this rotation is repeated every sixteen years, each of the four fields having received a rotation of four years in alfalfa.

S=Seed to alfalfa in fall. B=Break alfalfa sod. (This should properly be done in the spring when the new catch of alfalfa by fall seeding is assured.) CC=Catch crop or green-manuring crop, planted in the stubble after the small grain is harvested. M=A dressing of barn-yard manure applied in the fall and winter on alfalfa or corn-stubble land and plowed under previous to planting the following crop of corn.

This plan of rotation is more readily understood in this way: It is really a three-year rotation on three fields, one of the four fields being kept continually in alfalfa, as shown in the plan. The order of the rotation on each field is corn, followed by corn, followed by small grain. Thus, two fields of corn, one of small grain and one of alfalfa are grown on the farm each year. At the end of four years the field in alfalfa, which has not been included in the three-year rotation, is plowed and planted to corn the succeeding season, while one of the three fields which has been in the regular rotation is seeded to alfalfa and comes out of the regular three-year rotation plan, remaining in alfalfa for four years, when this field is plowed and planted to corn and becomes one of the fields in the three-year rotation series, while another field which has been seeded to alfalfa is thrown out of the regular rotation system. It will be observed that such a plan may be followed with five fields, six fields, or in fact any number of fields. With four fields, by the method described, one-fourth of the farm is kept continually in alfalfa. With five fields, one-fifth of the farm would be in alfalfa each year, and it would take twenty years for the alfalfa rotation to be carried out on all the fields. With three fields, one-third of the farm would be in alfalfa all the time and the rotation system would be completed in twelve years.

A. M. TEN EYCK.

The College athletic team met its first defeat of the season by a Kansas team on Tuesday, when they played the Washburns, at Topeka, with a score of 7 to 2 in favor of the latter. At Emporia where they played the Normalites, the game stood even till the seventh inning, when our boys left the field on account of an arbitrary decision of the umpire. On Thursday afternoon the College team met the Fairmount College team on our own field and defeated it by a score of 4 to 3.

Professor Willard gave a talk before the Agricultural Association last Saturday, taking for his subject the Experiment Station at Darmstadt. He described the method of testing soils and the effect of fertilizers upon them devised and elaborated by Prof. Paul Wagner. The errors incident to plat experimentation are well known to experts. The impossibility of obtaining exactly similar soil areas gives more or less uncertainty to comparisons of the results obtained. By operating on a small scale with perfectly mixed, uniformly prepared soils Professor Wagner obtained results the accuracy of which compared favorably with quantitative chemical analysis. When such satisfactory agreement can be obtained in duplicates it is evident that the method is valuable for making careful comparisons of varieties, as well of the effects of fertilizers, water-supply, etc.

THE INDUSTRIALIST

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Local Notes.

Professor Erf was called to Monroeville, Ohio, last week on account of the death of his sister.

President Nichols attended a regular meeting of the State Board of Education at Topeka on Wednesday.

Professor Theo. Scheffer will give a daily lecture to the Riley County Teachers' Institute this summer.

The Shawnee County Horticultural Society is planning to have a big excursion to the College on August 9.

The Kansas Agricultural College will be represented on the platform of most of the Kansas chautauquas this summer.

Captain Shaffer has commenced drilling the artillery squad. Color-sargeant E. L. Edwards is the captian of the battery.

Mr. John Hamilton, farmers' institute specialist, Department of Agriculture, Washington, D. C., will visit the College some day next week.

Professor Dickens went to Lawrence Wednesday to address the State Association of the Women's Federated Clubs on landscape gardening.

Manager Dean has arranged for an extra game with K. U. to be played here May 22 or 23. He has made a date with Fort Riley here the day before Commencement, June 13.

Captain Shaffer has a letter from Lieutenant Harvey Adams, from Kobl, Japan, saying that he is enjoying a stop in that country while on his way to Manila, where he will serve as third lieutenant in the Philippine Constabulary.

The eighth International Agricultural Congress will be held at Vienna, Austria, on May 21 to 25, 1907. It is planned to make this session the largest gathering of agriculturists ever held. The committees are already working on the program.

Miss Barbour is drilling her classes in calisthenics with the intention of giving a public lawn exhibition. The program will consist of a May-pole dance; a rose drill, and a number of new and very interesting exercises. The date of the exhibition will be announced later.

The Commencement exercises of the city schools will be held at the Congregational church, on Thursday evening, May 17, beginning at 8:00 o'clock P. M. The graduating class numbers twenty-five pupils. Tickets will be placed on sale at Willard's corner drug store on Wednesday afternoon at 4:30. Admission, fifteen cents.

Assistant Professor Flora Rose, with seven members of the senior elective class in domestic science, has begun an experiment which is to be carried on for several weeks. The girls will prepare their meals in the domestic science laboratory, and an accurate account will be kept of everything used. The calorie value and nutritive ratio of the consumed rations will be worked out. The object of the experiment is to determine what may be done in the line of cheap dietaries.

Alumni and Former Students.

Miss E. Jeannetta Zimmerman, '91, will do Chautauqua work in the East this summer.

Miss Maud Hart, '01, and her brother are living on the old Hart homestead, near Coin, Iowa.

C. W. Thompson, '89, and wife, of Holton, Kan., are happy in the birth of a daughter, Monday, May 7.

Mr. Louis Bender, '04, has been granted a franchise for an electric light plant in his home town, Highland.

Miss Kate Zimmerman, '00, will close her work, May 18, as science teacher in the Fruita High School, Fruita, Colo.

Ula Dow, '05, after a year's work at Framingham, Mass., will conduct the summer work in domestic science here during the month of July.

Clara Pancake, '03, who has been with her sister at Netawaka for some time, will enter College shortly for some graduate work in domestic science.

A son was recently born to Mr. Walter Eshelman and Mrs. Susan (Nichols) Eshelman, '89. Mr. Eshelman is still connected with a music store in St. Joseph, Mo.

Mr. and Mrs. Wilbur Sanderson, '98, have completed some improvements to their cosy home in east Marysville. They have recently purchased land in Wallace county.

The *State Normal School Bulletin*, Stevens Point, Wis., recently received, contains a detailed statement of the domestic science work there, which is in charge of Helena M. Pincomb, '01.

Frances Fish, '05, is at home at Santa Barbara, Cal., and with the assistance of her mother, one day recently, made two hundred pounds of flour into bread for the San Francisco sufferers.

F. W. Wilson, '05, animal husbandman at the University of Arizona, occasionally runs across some of the College people even in that far-off country. He recently had a visit from W. S. Sargent, '01, and also met Gertrude Coburn, '91, and Bessie Orr, student in 1897.

G. F. Wagner, '99, Enterprise, Kan., is planning to establish a pure-bred Polled-Angus herd. He attended the Rhoades-Huntress wedding and took occasion to visit the College and look over its animals, as well as see the many improvements since his last visit, four years or more ago.

Miss Mary Wilkin and brothers, John and Stephen, have purchased 600 acres of land adjoining Hoxie, and will move there when they can sell their 800-acre ranch, where they now live, near Stockton.

Clarence E. Wood, '79, has gone down into the Indian Territory to grow up with that part of the country when it becomes a state. He was a prominent member of the Oklahoma legislature, and for the last twelve years has been a farmer and editor. He has two daughters ready to enter the College.

The *Topeka Capital* for May 6 contains an entertaining account of the cooking classes of Miss Margaret Haggart, '05. We learn from this that "At present the society classes are just taking up pastry, salads, and ices. They are far enough along so that Miss Haggart considers it safe enough for them to eat their own product." While the article is permeated by a certain amount of levity, it shows that Miss Haggart is doing good work and that it is arousing much interest. Her Alma Mater comes in for a share of the credit.

Dr. H. A. Brous, '74, died Thursday, May 10, at 10:30 A. M. Doctor Brous was one of the most talented men that have gone out from this institution. As a physician and surgeon he attained an eminent rank in Philadelphia. By an accidental wound while engaged in an operation he was inoculated with a poison that wrecked his nervous system and terminated in weary years of helplessness a life that had been so full of strength and usefulness. Doctor Brous bore his fate with cheerfulness and through it all he had the ministrations of his devoted wife, who will receive the sympathy of many friends.

The marriage of Miss Edith Huntress, '01, and Mr. William J. Rhoades, '97, of Olathe, took place at the Presbyterian church, this city, Thursday evening at 8 o'clock, the Rev. Gelvin, performing the ceremony. The church was well filled with invited guests to witness this most interesting and impressive event in human lives. The ushers were Mesdames Peache (Washington) Anderson, Elsie (Robinson) Mudge, Helen (Knostman) Pratt, Olivia (Staatz) Reimold, and Misses Alice Ross and Gertrude Rhodes. The bridesmaid was Miss Clara Spilman, and the ringbearer, Allison Whitten. After the wedding the relatives and intimate friends were received at the home of Mrs. Huntress by the bride and groom, assisted by Mrs. Huntress and the father and sister of the groom. The bride wore white and the groom black. All weddings are alike except that some are different. This was different so far as K. S. A. C. is concerned, in that nearly all taking part were College people. The bride received many beautiful presents which memory and custom forbids us to mention in detail. If a perfect day, a beautiful ceremony and the best wishes of many friends can have any effect in starting a bridal couple on a delightful journey through life, Mr. and Mrs. Rhoades will have one continuous pleasure trip. The College wishes its children the best of life.

Press Notices.

The Domestic Science teachers' term at the Kansas State Agricultural College will open May 22 and continue for ten weeks. This is intended for women who wish to fit themselves for teaching domestic science in the public schools.

The good roads department of the Kansas State Agricultural College has a contract with the township trustees for work on certain township roads. Several miles of road are dragged at the rate of twenty-five cents per hour. The department also does all the grading required, using a big traction-engine belonging to the College, with students in the traction-engine class handling the engine, while the township furnishes the grader and the men to handle it.

The Annual Reports proper of the Experiment Station have been for the most part merely a formal statement concerning work in progress, and financial reports. The one for the year ending June 30, 1905, however, contains a detailed account of coöperative investigations in irrigation conducted by the Station in connection with the United States Department of Agriculture. Part of these experiments and observations were made at the Fort Hays Branch Station, and others at Garden City and other points. The data collected should be of much value to those contemplating irrigation on the small scale. The Report may be obtained on application to the Experiment Station, Manhattan, Kan.

The poultry department of the Kansas State Agricultural College is now carrying on a feeding test for egg-production with six pens of White Leghorns. Pen I is fed corn and ground beef scrap, a prepared food. Pen II is fed corn and casein, bought from the creamery. Pen III, corn and Pape's food (wheat, corn-chop, and casein). Pen IV, corn and wheat. Pen V, corn and millet. Pen VI, Kafir-corn and ground beef-scrap. The hens are practically the same age. Green food is given them in the shape of clover, alfalfa, and various cut grasses and weeds, and oyster shell is before them all the time. The corn is fed twice a day, but all other food is kept before them constantly in hoppers. The result of the tests will be published later.

Theo. Scheffer, assistant professor of zoölogy in the Agricultural College, has undertaken an interesting experiment in "school gardening." This is outside of his department, and purely a labor of love. He has a class of forty boys and girls from the sixth grade of the Avenue school, Manhattan, and they have a city lot. Each child has a plot $8\frac{1}{4} \times 16\frac{1}{2}$ feet. Each child was assessed ten cents for seeds and other expenses and is to have the entire revenue from his or her plot. Radishes, peas, beans, lettuce and beats have now been planted, and tomato and cabbage plants will be set out soon. Across one end of each plot is a flower bed consisting of nasturtiums, poppies, larkspurs, and sweet peas. More girls than boys entered the class. Mr. Scheffer gives to the class two hours each week.

The Farm Department of the Kansas State Agricultural College has the following varieties of corn in field tests: Hildreth, 40 acres; McAuley, 35 acres; Reid's, 10 acres; Kansas Sunflower, 10 acres; Silvermine, 8 acres; Boone County White, 3 acres; Legal Tender, 7 acres; Roseland White, 2 acres. Eighty varieties are being planted in variety tests in one-tenth-acre plots.

Last summer it was discovered that many very nice elm trees about Manhattan were dying. Mr. Geo. A. Dean, assistant in entomology at the Kansas State Agricultural College, got some small pieces of limbs from one tree and placed them in a "breeding cage." Now the beetle of the round-headed tree-borer is coming out of the wood in sufficient numbers to prove that these vicious little borers caused the death of the tree. The sad thing, though, is that there are but two remedies for this pest—digging into the tree after them, one at a time, and woodpeckers. Another proof that the birds are the farmers' best friends.

The Mechanical Engineering Department of the Kansas State Agricultural College has a student, E. D. Richardson, of Mitchell county, who chose as his thesis for graduation, "The Design and Construction of a Gasolene Traction-Engine," and began last fall the work of actually designing and constructing such an engine. It is now nearing completion, a monster forty horse-power, four cylinder gasolene engine for use in threshing and plowing. Some of the large castings were bought in eastern foundries, but most of them were made here in the College foundry, by the young man himself, under supervision, of course, of the department. It will be completed in time for use in this summer's wheat fields, a monument to the skill of Mr. Richardson and to the kind of training given by Professor McCormick.

Summer Course in Domestic Science for Teachers.

On May 22 will open the summer session at the Agricultural College. This work is offered for teachers, and the time chosen is that at which most public schools are closed for the summer.

It is considered desirable that the theory concerned in domestic science teaching be especially emphasized, but laboratory classes will occupy two-thirds of the time each day. The lessons will include the preparation of vegetables, cereals, eggs, milk, cheese, meats, etc., the making and baking of breads, pastry, and cakes, and the compounding of salads, ices, and gelatine dishes. Lectures will be given on the sources, chemical composition and digestion of each food considered.

The sewing includes plain needle work with models such as are used in all places where domestic art is correctly presented, machine work on white goods, drafting and cutting patterns, and making one unlined dress of wash material.

The College is a pleasant place at which to spend a vacation. Any one desiring information regarding the course should correspond with Mrs. Calvin, of the Domestic Science Department.

Music Recital

Wednesday, May 16, 1906, at 8 p. m.
College Auditorium



1. Selection, - - - - - ORCHESTRA.
2. Piano, - Day of Sunshine, - - - Hennes
RUTH TAYLOR.
3. Vocal, - (a) Sing Me to Sleep, - - - Greene
(b) An Episode, - - - Lohr
A. G. PHILIPS.
4. Piano, - - Helene, - - - Wollenhaupt
GRACE CHISTENSEN.
5. Guitar, - (a) Gypsie Schottische, - - Partee
(b) La Vere Waltz, - - - Guckert
HELEN WESTGATE.
6. Piano, - - Lurline, - - - Seeling
ELSIE BROWN.
7. Vocal, Song of the Hybrias the Cretan, Elliott
HARRY E. PORTER.
8. Piano, - Valse E. Minor, - - - Chopin
EUGENIA FAIRMAN.
9. Violin, - 6th Air Varie, - - - DeBeriot
MARY LANE.
10. Piano, - - (a) Impromptu, - - - Seeling
(b) Liebestraum, - - - Liszt
GERTRUDE HILLIARD.
11. Vocal, (a) The Arrow and the Song, Gounod
(b) Husheen, - - - Needham
HELEN SWEET.
12. Piano, - Attaque des Uhlans, - - - Bohm
TILLIE KAMMEYER, MARIE COONS.

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Historical Society

34

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MISS ANTONETTA BECKER (Drexel).....	Superintendent of Domestic Art

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ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....	Asst. Professor of Music
MISS FLORA ROSE, (Framingham Normal), B. S. (K. S. A. C.)....	Asst. Prof. of Domestic Science
VERNON M. SHOEMITH, B. S. (Mich. Agr. College).....	Assistant Professor of Agriculture
WALTER E. MATHEWSON, M. S. (K. S. A. C.).....	Assistant Professor of Chemistry
THEO. H. SCHEFFER, A. M. (Cornell University)	Assistant Professor of Zoölogy

Miss Ada Rice, B. S. (K. S. A. C.).....	Instructor in English
William L. House.....	Foreman of Carpenter Shop
William Anderson, B. S. (K. S. A. C.).....	Assistant in Physics
Miss Gertrude Barnes.....	Assistant Librarian
Louis Wabnitz.....	Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.).....	Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.).....	Foreman in Foundry
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Miss Emma J. Short.....	Assistant in Preparatory Department
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Miss Ella Weeks, A. B. (U. of K.).....	Assistant in Drawing
R. F. Booth, B. S. (Northwestern).....	Assistant in Mathematics
Robert E. Eastman, M. S. (Cornell University).....	Assistant in Horticulture
Miss Daisy Zeininger, B. A. (Fairmount).....	Assistant in Mathematics
Roy A. Seaton, B. S. (K. S. A. C.).....	Assistant in Mathematics
Hernon C. Kyle, B. S. (K. S. A. C.).....	Assistant in Agriculture
George F. Freeman, B. S. (Ala. Polytech. Inst.).....	Assistant in Botany
M. Francis Ahearn, B. S. (Mass. Ag. College).....	Foreman of Greenhouses
Miss Cecilia Augspurger (Illinois Wesleyan).....	Assistant in Music
Charles W. Melick, B. S. (Neb.).....	Assistant in Dairy Husbandry
Miss Alice Loomis, B. S. (K. S. A. C.).....	Assistant in Preparatory Department
George P. Jackson, Pn. B. (Chicago).....	Assistant in German
Miss Gertrude Stump, B. S. (K. S. A. C.).....	Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....	Assistant in Architecture and Drawing
Howard R. Watkins, M. S. (Iowa State College).....	Assistant in Chemistry
Heman A. Wood, B. S. (Olivet).....	Assistant in Chemistry
Geo. C. Wheeler, B. S. (K. S. A. C.).....	Assistant in Animal Husbandry
Leonard W. Goss, D. V. M. (Ohio University).....	Assistant in Veterinary Science
Melvern F. Thomas, B. S. (Texas A. & M. College).....	Assistant in Mechanical Engineering
E. B. Milliard.....	Foreman of Blacksmithing
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THE INDUSTRIALIST.

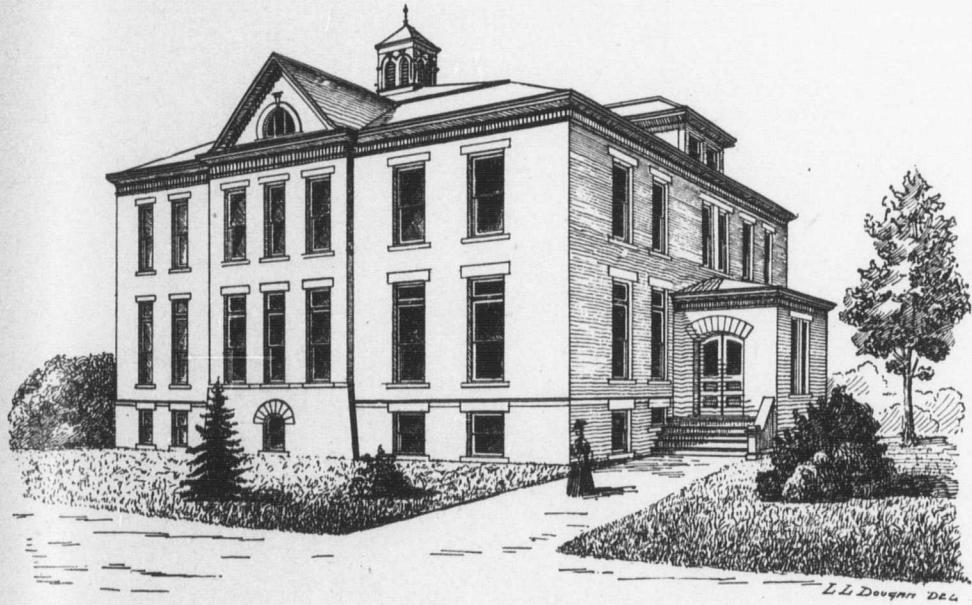
VOL. 32.

MANHATTAN, KAN., MAY 19, 1906.

No. 34

Architectural Compositions.

The pen drawings printed with this article are the work of three students of the architectural course. The perspective of the schoolhouse was drawn by Junior L. L. Dougan, from plans

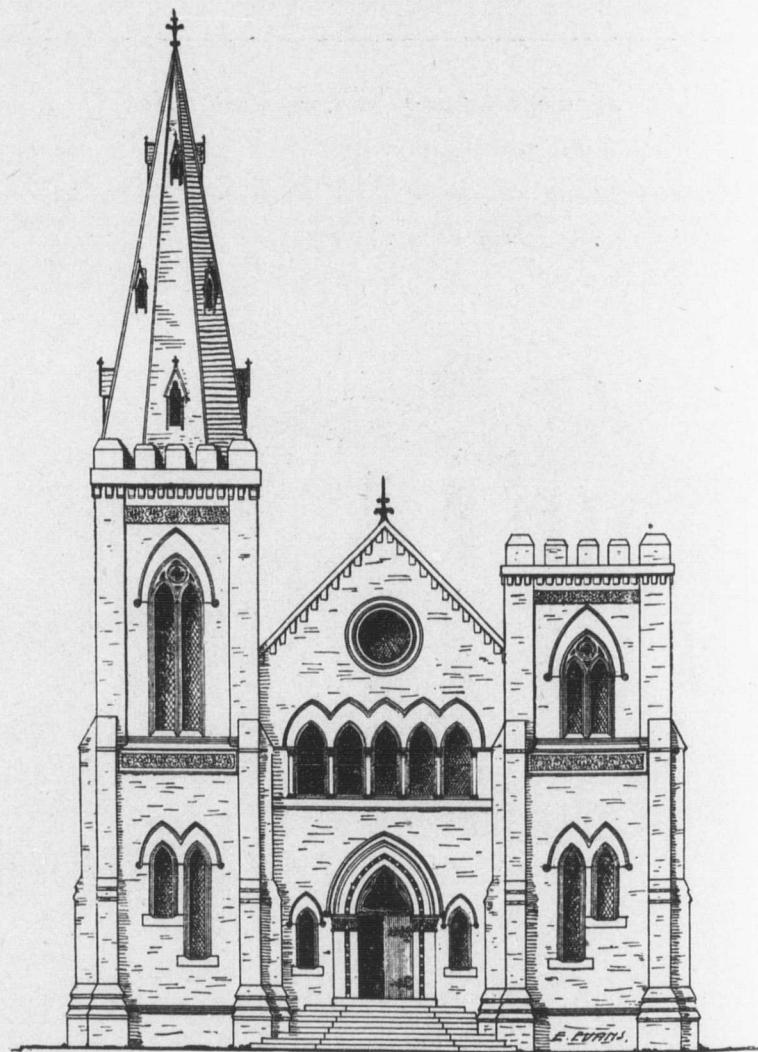


and elevations of a building drawn by him as a regular class exercise. The churches are the work of senior students, E. J. Evans and H. A. Spuhler. The two front elevations represent a part of the work of the class in architectural composition of last winter term.

In the fall term this class takes up the architecture of the old Egyptians, Greeks, and Romans; in the winter it studies the Romanesque, Byzantine, Moorish and Gothic styles, and in the spring term it investigates the Neo-Greek, Colonial, Modern Romanesque, etc. One of the tasks given the senior class last winter consisted in drawing sketches of a stone church costing between \$25,000 and \$50,000, treating its exterior in Modern Romanesque and Gothic. The ground plan was furnished by the professor and the students were not allowed to change its general

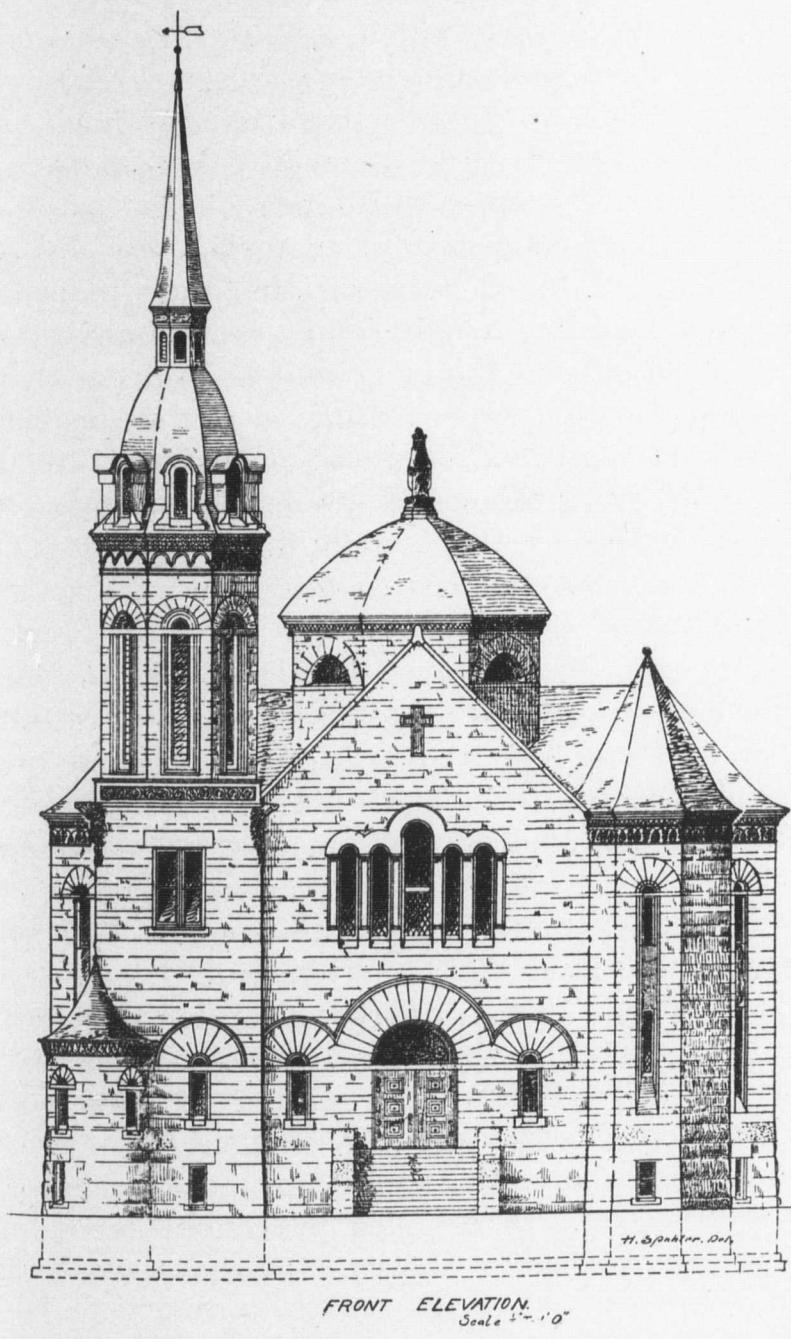
form and size. Only such minor alterations were permitted that were positively required by the selected historic styles.

The first figure gives the facade of the church, treated in Gothic by Mr. Evans, who made inked sketches to scale of the floors, the front, the sides, and the vertical longitudinal section. Mr. Spuhler, who drew the second figure, had studied the Gothic



before and devoted himself chiefly to the Romanesque solution, of which he made a number of blue-print tracings and the inked front elevation printed here. None of these drawings are copies or "compilations and quotations." They grew in the drafting-room under the eyes of the professor.

These studies and the drawings shown here are not faultless solutions. The task of producing young architects is not so easy as this. A university cannot produce full-fledged jurists or poets, and a technical school cannot just make inventors or architects. The illustrations are simply evidences that the architectural course is at work; that it is doing something.



Home Preservation of Fruits.

The season for the preservation of fruit is approaching. While all good housekeepers take pride in a well-filled fruit closet, many doubt if the home prepared article is as economical, time and fuel being taken into consideration, as the commercial brands on the market. Recent investigations in the Experiment Stations indicate that a large proportion of the canned foods on the market have preservatives, coloring matter, or other adulterants added to them, and not a few have proven to have all the objectionable features. Admittedly one cannot purchase as pure, as cleanly prepared and as good quality as they can prepare at home unless they purchase the

best brands in the market, which are always very expensive. The choice, then, becomes one between these: cheap adulterated inferior canned foods, very expensive foods, or home prepared materials. Eliminating the first as in all cases undesirable, the choice between the two latter will depend upon cost; not upon cost of material, but upon cost of material *plus* cost of woman's time and strength. Concerning this each individual case must be decided according to its peculiar conditions, yet as every housekeeper must let some things go undone in order that others may receive her attention, we are often led to the conclusion that many tasks that might be delegated or omitted are done by women who think that it does not pay them to can their own fruit when it would have been better to omit other duties. It could be proven that in every case the first cost of material is far less than the cost of the commercial food.

A series of experiments carried on through several years, under rather unfavorable cost conditions, have given results somewhat as follows: From 16 to 20 quarts of peaches may be canned from one bushel of the fresh fruit. Peaches at \$1.00 per bushel and sugar at \$5.00 per hundred would make the home canned fruit cost from 6 cents to $7\frac{1}{2}$ cents per quart, cost of jar not included. The quart of peaches thus prepared will contain more solid than the ordinary three-pound can as purchased. Blackberries and raspberries yield from 13 to 17 quarts per crate, there being little waste if in good condition when used. Tomatoes should yield 13 quarts to the bushel. Grapes yield one pint of juice to each two pounds of fruit, and this juice is most excellent for use in sickness or in health. One quart of juice and $1\frac{1}{2}$ pounds of sugar gives six glasses of grape jelly. Pine-apples purchased when cheapest can be obtained for 75 cents per dozen. One pine-apple fills a pint jar.

The following suggestions may prove helpful to the young housekeeper: Can fruit in small quantities daily while preparing meals rather than canning large quantities at one time and becoming over fatigued. Cover pie tins with several layers of butcher's brown paper, wet in hot water; place jars just removed from boiling water on this paper; put rubber in place, fill at the range, wipe with cloth wrung from hot water, screw lid in place and invert on table. By this method of handling neither stove nor table becomes soiled, and at the end of the work the paper can be destroyed and a minimum of cleaning remains to be done. Every housekeeper should have a strong hook placed over the kitchen table (a bird-cage hook answers the purpose) where she can suspend

the jelly bag while it drains. If the fruit is cooked and hung in the evening it will all drain out before morning, thus avoiding tiresome squeezing and heated, stained hands. By making the jelly in the morning hours, jelly-making ceases to be a dreaded task.

There is such satisfaction in the result of the labor expended in canning, such unvarying success where intelligent attention is given to details that it seems reasonable to conclude that in the majority of cases it would be better to use home prepared foods even if other tasks were sent out of the house.

HENRIETTA W. CALVIN.

Soil Management.

In the management of the farm the management of the soil is of the greatest importance. It is impossible to grow good crops on the same field year after year, except by thorough tillage and cultivation, the addition of fertilizers and the proper rotation of crops in order to maintain the fertility of the soil. It has been truly said that "tillage is manure" to the crop. The plant-food of the soil is largely in an unavailable condition, and is only made available for the use of plants by the action of physical and chemical agents. The presence of air and moisture is necessary that decomposition and chemical change may take place, by which the insoluble and unavailable plant-food elements of the soil are made soluble and available to the plants for food. Thus, tillage and cultivation of the land by aerating and pulverizing the soil, and by the conservation of soil moisture make favorable conditions for the development of bacteria, hastening the processes of decomposition and chemical change which make the plant-food available for the use of the crops.

Simple tillage, however, will not maintain the fertility of the soil. It becomes necessary finally to replace the plant-food, exhausted by the continuous growing of crops, with the application of manure or chemical fertilizers or by the rotation of crops, in which the legume crops such as alfalfa and clover are introduced in order to restore again the humus and nitrogen, exhausted in the ordinary methods of farming, by continuous grain cropping. When land has been farmed a long time to wheat or corn it finally ceases to produce profitable crops. The soil is not necessarily exhausted in fertility, but by a long period of continuous cropping with one crop the diseases and insects which prey on the corn or wheat have accumulated in the soil, and the organic matter and humus and nitrogen have become more or less exhausted. The land is really "wheat sick" or "corn sick;" what it needs more

(Concluded on Page 338.)

Program for Spring Term, 1906, Showin

INSTRUCTORS.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.
Walters.....	Art Lectures..... 8	Specifications..... 6	Arch. Comp..... 6	Home Arch..... n
Weeks.....	Home Dec. ¹ 47	Color & Design..... 9	.....	.....
Brandt.....	.....	.....	.....	.....
Willard ²	Chemistry II..... 34	Adv. Org. Chem., 8	Chem. IV ¹ 16	Chem. V..... 29-25
Mathewson ².....	.....	Chem. III..... 45	.....	.....
Watkins.....	.....	Chemistry III, Laboratory..... 45	Chem. III, Lab..... 33	Chemistry III..... 33
Wood.....	.....	.....	.....	.....
Popenoe ².....	.....	.....	.....	.....
Dean ².....	.....	.....	.....	.....
Scheffer.....	.....	.....	.....	.....
Remick.....	Anal. Geometry..... 27	Spec. Ent..... 4	Entomology..... 28	Spec. Ent..... 4
Halstead.....	Geometry II..... 30	Trigonometry..... 21	Algebra IV..... 34	Spec. Zoology.... 1
Zeininger.....	Algebra III..... 41	Algebra III..... 34	Geometry I..... 25	Def. Integrals.... 10
Booth.....	Geometry I..... 26	Geometry I..... 17	Algebra II..... 27	Dif. Equations.... 21
Seaton.....	Algebra II..... 23	Algebra III..... 11	Algebra IV..... 37	Geometry II..... 27
Eyer.....	.....	Power Trans..... 19	Alt. C. Mach..... 19	Algebra II..... 27
Hamilton.....	El. Physics..... 26	El. Physics..... 44	Physies IV..... 23	Algebra III..... 30
Anderson.....	Electricity..... 25	.....	.....	Dynamics..... 19
Roberts ².....	.....	Botany II..... 39	Botany II..... 35	El. Physics..... 21
Freeman ²	Botany II..... 38	Botany I..... 57	Botany I..... 46	Botany II..... 33
McKeever.....	Psychology..... 24	Meth. & Mgt..... 15	Composition..... 34	.....
McCormick.....	Shop Lect. IV, S. 13	.....	.....	.....
Potter.....	Thermod. II..... 4	All. Mech. II..... 5	Shop Lect. VII, S. 4	VII..... W & F
Thomas.....	.....	Hydraulics ¹ 29	Mechanical Drawing	Valve Gears ¹ 13
House.....	Woodwork I..... 24	Woodwork II..... 34	Woodwork II..... 20	Woodwork I..... 21
Wabnitz.....	.....	.....	.....	.....
Ridenour.....	Foundry.....	Mondy 2	.....	.....
Milliard.....	Blacksmithing.....	.....	.....	Monday 18
Dickens ².....	.....	Orn. Gardening..... 4	Veg Gardening..... 25	Horticulture..... 35
Eastman ².....	.....	Rhetoric II..... 23	Rhetoric II..... 18	Eng. Lit. II..... 21
Brink.....	Eng. Literature..... 8	Rhetoric I..... 31	Rhetoric I..... 31	Rhetoric I..... 35
Rice.....	Readings..... 33	Adv. Comp..... 24	Composition..... 23	Classics..... 20
Hopps.....	Classics..... 26	Farm Mechanics..... 33	.....	.....
TenEyck ².....	.....	.....	.....	.....
Shoeshmith ².....	.....	.....	.....	.....
Kyle.....	.....	.....	.....	.....
Calvin.....	Home Nursing ¹ 47	.....	Agriculture..... 22	.....
Rose.....	.....	.....	Therapeutic Cooking	12-16
Monsch.....	El. Cooking ¹	Domestic Science, Elective ¹	.....	15
Price.....	Am. History..... 21	17	Elementary Cooking	13
Kammeyer.....	Economics..... 28	34	Civics..... 42	Am. History.... 39
Erf ².....	.....	.....	.....	Pub. Spk. II ¹ 31-27
Melick ².....	.....	.....	.....	.....
Cortelyou.....	German III..... 19	German II..... 27	German III..... 28	German IV..... 18-22
Jackson.....	Adv. Comp..... 15	German III..... 23	Adv. Comp..... 26	German II..... 17
Valley.....	Singing..... 16	Singing..... 18	Singing..... 13	Singing..... 19
Brown.....	Mandolin..... 12	Violin..... 47	Guitar..... 17	Theory..... 12
Augspurger.....	Piano..... 11	Piano..... 10	Piano..... 14	Piano..... 12
Schoenleber ²	Surgery III..... 7	Medicine III..... 7	Comp. Phys..... 16	Matera Med. III ¹ 14
Barnes ².....	.....	.....	.....	Gen. Path II ¹ 8
Goss.....	Physiology..... 11	Physiology..... 30	.....	Bacteriology.... 29-32
Kinzer ².....	.....	Elective..... 6	Animal Breeding, 17	.....
Wheeler ²	Stock Breeding..... 26	.....	.....	.....
Rickman.....	Printing..... 7	Printing..... 7	Printing..... 4	Printing..... 5
Rodell.....	Bookkeeping..... 44	Algebra I..... 46	Arithmetc A..... 35	Bookkeeing.... 21
McFarland.....	Grammar A..... 23	Grammar B..... 11	Algebra I..... 25	Ady. Grammar.... 32
Holroyd.....	Med. History..... 39	Anc. History..... 31	Anc. History..... 23	Med. History.... 38
Short.....	Arithmetc B..... 9	History A..... 23	History B..... 8	Geography..... 4
Thompson.....	Phys. Geog. II..... 16	Phys. Geog. II..... 12	Phys. Geog. I..... 29	Phys. Geog. II..... 15
Loomis.....	.....	.....	.....	Phys. Training.... 16
Barbour.....	.....	.....	.....	.....
Becker.....	Sewing III..... 16	.....	.....	.....
Coe.....	Sewing II ¹.....	.....	.....	.....
Stump.....	Sewing III..... 16	.....	.....	16
Lund.....	.....	15	Sewing I ¹.....	.....
Reynolds.....	Grammar B..... 11	.....	Sewing II..... 11	.....
Wood.....	Piano..... 7	Readings..... 13	.....	.....
Harris.....	.....	Piano..... 12	Readings..... 15	Adv. Grammar.... 12
		Composition..... 27	Algebra III..... 21	Piano..... 12

¹ Alternate Days.² Experiment Station Work.

Instructors, Subjects, and Number in Class.

Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.
Modeling.....	W & F 7		
Architectural Composition.....	T & T 4		
Object Drawing.....	Tu. 34, Th. 32		
Freehand Drawing.....	W 31, F 17		
Elementary Projection.....	Tu. 26, W 40		
Geometrical Drawing.....	Th. 39, F 36		
Advanced Projection.....	S 20		
Organic Chemistry Laboratory.....	W & Th. 6		
Chemistry V Laboratory.....	T & T 23, W & F 31		
Entomology Laboratory.....	W 14, Th. 13	Spec. Entomology..... 2 |	
Zoological Laboratory.....	W & F 8, T & T 8		
Surveying.....	68		
Alternating Current Mach. Lab....	T & T 10, W & F 9		
Physics Laboratory.....	20		
Electrical Laborator.....	T & T 11, W & F 9		
Ethics.....	7 |		
Engineering Laboratory.....	4		
Shop Lectures II.... S 61 |			
Mechanical Drawing IV.....	16, 13; I 8, 13, 12	Mechanics..... 7 |	
Pattern Making.....	T 14, W 14, T 14, F 10	Pattern Making..... Monday A.M. 4	
Machine Shop.....	T & T 5, W & F 12	Machine Shop..... T & T 3	
Foundry.....	T 1, W 4, T 5, F 2		
	| Shop Lectures..... S 37		
Blacksmithing I.....	T & T 19, W & F 17, S 19	Blacksmithing..... T & T 5, W & F 1, S 20	
Horticultural Laboratory.....	T & T 34		
Crop Production.....	4 |		
Domestic Science III.....		T & T 14, W & F 15 |	
Public Speaking II ¹ 18 |			
Elective Dairying.....	9		
Singing.....	38 | Singing..... 27	Chorus..... Thursday noon 126	
Hand Instruction.....	18	Military Band..... 40 | Orchestra..... 7:30 A.M. 22	
Piano.....	12 | Piano..... 12		
Anatomy II ¹	16	Clinics..... 7	
Bacteriology Laboratory.....	T & T 20, W & F 21		
Physiology Laboratory.....	W 17, Th. 17		
Printing.....	T & T 7	Printing..... 3 |	
Physical Training.....	24 | Physical Training..... 28	Physical Training..... 25 |	
Dressmaking.....	17		
Traction Engins.....			82
Piano.....	13 | Piano..... 15		

than anything else is a rotation of crops, which shall include legumes and grasses, by which the organic matter, humus and nitrogen, exhausted by continuous cultivation and cropping with grain crops, may be restored to the soil.

Grass is a soil protector, a soil renewer and a soil builder. Covering the soil with grass is nature's way of restoring to old, worn-out land the fertility and good tilth characteristic of virgin soil. The true grasses do not add nitrogen to the soil, as do clover, alfalfa and other legume crops, yet the grasses are in a sense nitrogen gatherers in that the nitrogen of the soil is collected and stored up in the roots of the grass in the form of humus. Thus, grasses prevent the waste of nitrogen and other plant-food elements and serve to protect the soil and to maintain its fertility. By their extensive and deep-penetrating root systems many grasses also tend to break up and deepen the soil, gathering and storing plant-food in the roots and thus actually increasing the available plant-food of the soil.

The legume crops, such as clover and alfalfa, not only accomplish all that grasses may accomplish, as described above, but actually increase the total and available supply of nitrogen in the soil. By means of the bacteria which grow on the roots of legume plants, free nitrogen taken from the air in the soil is made available for the use of the plant, and not only may large yields of forage rich in nitrogen and protein be taken from land planted with legume crops, but by the great root growth and the accumulation of humus by these crops the nitrogen of the soil is actually increased. Moreover, perennial legumes, such as clover and alfalfa, are very deep feeders; thus a part of the mineral elements of plant-food required by these crops is taken from depths in the soil below the feeding ground of ordinary crops, and by the large root growth in the surface soil there may be accumulated a supply of the mineral elements of plant-food which gradually becomes available, as the roots decay, to crops which follow the legume crops.

When the wild prairie is first broken the soil is mellow, moist and rich, producing abundant crops. After a few years of continuous grain cropping and cultivation, the physical condition of the soil changes—the soil grains become finer; the soil becomes more compact and heavier to handle; it dries out quicker than it used to and often turns over in hard clods and lumps when plowed. The perfect tilth and freedom from clods, so characteristic of virgin soils, is always more or less completely restored whenever land has been laid down to grass for a sufficient length of time.

A. M. TEN EYCK.

THE INDUSTRIALIST

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Local Notes.

Professor Cortelyou is happy. It is a 12-pound boy.

The total pay-roll of the College printing-office is over \$500 per month.

Professor Dickens went to Hays Experiment Station last Monday to look after the work of tree planting and parking.

Professors Ten Eyck and Dickens attended a farmers' institute near Stockdale, over in Pottawatomie county, last Thursday.

The Horticultural Department has completed its first orchard spraying of the season. Over 3500 trees were sprayed the past two weeks.

General Caldwell, of Leavenworth, accompanied by Hon. E. B. Purcell and wife, of Manhattan, visited College and attended chapel Friday morning.

The ladies of the Lew Gove Relief Corps have presented each room of the city schools with a fine flag and standard, and a copy of the Patriotic Reader.

Contractor Henry Bennett, of Topeka, has started work on the square stone pier of the big smoke stack. There will be six feet of solid concrete and thirty-nine feet of stone work lined with fire-brick below the octagonal brick shaft.

Junior student S. V. Smith, who has been employed by the Horticultural Department for fighting the plum and peach curculio, is out every morning at 4:30 with the curculio catcher. The pest seems to be worse this year than usual.

Assistant Eastman, of the Horticultural Department, went to Hutchinson, Thursday, to study the coöperative spraying experiments of that section of Reno county, which is rapidly becoming one of the most important apple-growing sections of America.

Messrs. W. T. Carter and H. C. Smith, of the Bureau of Soils, have arrived and begun the soil survey of Riley county. They visited the College Monday forenoon to make the acquaintance of a number of the Experiment Station officers. The survey will keep them all summer.

Prof. John Hamilton, farmers' institute specialist, of the Department of Agriculture, Washington, D. C., visited the College on Tuesday and Wednesday, and while here met with the College institute committee, President Nichols, and Secretary Miller for a conference on institute work.

The Horticultural Department has done considerable work the past two weeks on the terraces around the Auditorium. A part of the parapet has been raised and reseeded to blue-grass, while other parts have been soded and watered. A manure dressing next fall will complete the nursing process.

The railroads have granted a rate of one and one-third fare for the round trip, from all points in Kansas and including Kansas City and St. Joseph, Mo., on the certificate plan, to attend the Commencement exercises and alumni reunion. Tickets on sale June 9 to 13, good returning until June 18. Be sure and take a certificate for each ticket purchased coming. These, when signed by Miss Ada Rice, will enable you to obtain return ticket at one-third fare, provided one hundred certificates are presented.

Assistant G. P. Jackson, of the German Department of this College, has been elected professor of German of the Case School of Applied Sciences, at Cleveland, Ohio. He will have full charge of the department of German and receive a considerably increased salary. The professor intends to spend the summer vacation in Chicago, Ill., and at Paw-Paw Lake, Mich., where he will study and rest. We regret to see him leave this College. He is thoroughly conversant in the German and its different idioms and is a good instructor and an agreeable, sunny character.

Coach Melick is hard at work getting the track team in shape for the State intercollegiate meet which will be held in Topeka on May 28. Since the defeat of Baker on last Monday, prospects are bright for the Farmers, and it looks as though they are certain of second place at least, with a good chance for first. In the running events they are especially strong. The time of ten seconds made by Cain in the 100-yard dash is the best made in the State this year, and he will probably finish first in the State meet. In the quarter-mile, mile and two mile the boys also expect to finish first, with at least second in the low hurdles and the half-mile. An excursion will accompany the team from here.

The Rock Island will run an excursion to the College on May 29, at a very low rate. The special train will start from Norton at 2 A. M. and reach Manhattan at 10:30 A. M., and start back at 6 P. M. It will thus be possible for the visitors to see everything of interest about the College and yet reach home at a reasonable hour. The time here will be spent in visits to the Agricultural and Dairy buildings, Mechanic Hall and Domestic Science Hall, and the corn and grass plots and the stock barns. Later there will be a military drill, a lawn exhibit by the girls' gymnasium class and a short concert. It is hoped that several hundred people, especially farmers and their families, will visit the College and College farm. An excursion may be run from the southwestern part of the State June 5 or 7.

Alumni and Former Students.

A. N. H. Beeman, '05, of the *Missouri and Kansas Farmer*, Kansas City, made a short visit at the College and with friends this week.

Mail for O. G. Palmer, '87, second lieutenant, Seventh Cavalry, should be addressed: Care of Military Secretary, War Department, Washington, D. C., although Lieutenant Palmer is at present at Camp McGrath, Bantangas, P. I.

Irving Axelton and Madge Ruth McKeen, '01, were married Wednesday evening, May 16, at the home of the bride's parents, near Keats. Mr. and Mrs. Axelton carry with them the best wishes of many friends to their home at Randolph, Kan.

M. C. Adams, '99, is prospering to a satisfactory degree raising corn and converting it into pork. The past few years have given unexcelled crops in Phillips county. His sister, Bonnie Adams, '99, will be home for the summer, having been teaching in Colorado for the last year.

H. M. Bainer, '00, has recently been elected professor of engineering at the Colorado Agricultural College, Fort Collins, Colo., for the coming year, beginning July 1. This is a new line of work that is just being started in some of the agricultural colleges. The work taken up in such a department covers farm machinery, farm motors, drainage, irrigation, farm buildings, carpentry, blacksmithing, etc.

It is seldom that death shocks more unexpectedly than it did in taking Phil Sheridan Creager, '91, telegraph editor of the *Kansas City Journal*. Mr. Creager was operated upon for appendicitis on the 7th instant and was apparently getting along well until Thursday, but he died Friday morning the 11th. Mr. Creager had been connected with the *Journal* for more than ten years and was regarded as one of the brightest and most capable newspaper men in the West. He was of an unusually winning nature and a universal favorite, and will be long remembered by his classmates and hundreds of others besides his immediate family. He leaves a wife and two small children.

Professor Ten Eyck recently received a letter from H. V. Harlan, '04, who is now professor of agriculture in the agricultural school at Iloilo, Philippine Islands. He is about to begin some work in breeding corn and rice, partly as an experiment and partly to furnish instruction for his students. He also hopes to carry on some special investigations as work toward the degree of master of science here. Among other things he says: "I am located at Iloilo, some 300 miles south of Manila, on the island of Panay. Panay is the largest of the Visayan group. It is not so good a farming country as the Negros, east of us. I am in charge of the agricultural instruction in the provincial school here. We have a three years' course in agriculture; the pupils are in about the ninth grade when they enter the course. . . . I am well pleased with my outlook here. We like our town very much. The city has a large foreign element. The school land is located in the center of a city of 60,000 people. Living is expensive here, but I have reason to expect a raise in salary at the end of a year. Present salary, \$100 per month."

Press Notices.

Prof. A. M. Ten Eyck, professor of agriculture, Kansas State Agricultural College, has written one of the chapters for Bailey's New Cyclopedia of Agriculture, soon to be published by the MacMillan Company, of New York. The subject of the chapter is "Farm Management."

The Kansas State Agricultural College has one experimental plot of Bermuda grass, which promises well. Two years ago a short row of roots was set out as in a drill row. It grew well and, while some of it seems to have winter-killed, it has spread now to ten feet in width from that single row.

The Veterinary Department of the Kansas State Agricultural College has been experimenting for a year or two with a hog-cholera remedy of its own manufacture. Doctor Schoenleber wants to know of the earliest cases of hog-cholera and will either go in person or will send a small quantity with careful directions.

The Veterinary Department of the Kansas State Agricultural College is now beginning an experiment to observe symptoms and experiments with remedies for the so-called corn-stalk disease. They are feeding this discovered corn mold, caused by the corn worm, to a horse and will observe symptoms and test remedies.

The Kansas State Agricultural College has eight grasses on one-tenth acre plots for testing rate of growth and yield per year. These grasses are: Redtop, orchard-grass, bromus inermis, tall oat-grass, western rye-grass, timothy, and both English and Kentucky blue-grass. Tests are also being made with alsike, mammoth and common red clover, and Turkestan and common alfalfa and sand lucern.

Professor Popenoe, of the Kansas State Agricultural College, has been investigating the encroachments of the San José Scale in the Kansas orchards. He has only found them on the trees in one part of Dodge City. He has not found it at Garden City nor Hutchinson. Professor Popenoe will examine orchards in all parts of the State. Requests are now being filed and orchards will be visited in regular circuits. He is now working along the Santa Fe.

Insects Destroying Seed-Corn.

A correspondent in Butler county reports the destruction of about eighty acres of seed-corn at germinating time, and sends as the supposed insect cause a specimen of a small slender brown species of carabid beetle, known to the entomologist as *Clivina impressifrons*, apparently. If the relation of this beetle to the injury be as suspected, it is a most important fact, as the species and nearly related forms are abundant in all the eastern half of the State. But it is more likely that our correspondent has failed to catch the real culprit, and in order to ascertain the truth more surely, we request that whenever injury of this kind is noticed not one specimen alone, but several or many of the supposed pests

may be collected for examination and forwarded to the Entomologist, Experiment Station, Manhattan, Kansas. Such specimens must be packed in a tight tin box, such as a small baking-powder can, and if simply wrapped and tied may be mailed as third-class matter at one cent per ounce. The question as to what insects are responsible for the sometimes serious loss of seed-corn in the ground is of such importance that no painstaking effort to determine the real species at work will be lost. Our correspondents are therefore urged to send in such insects ascertained to be at work in the grains, and in all cases to send in several specimens of each, if possible, thus rendering more certain the determination of the true status of the insects as corn pests. E. A. POPENOE.

Do Red Texas Oats Turn to a Black Variety?

Farmers all over the State claim that they do. At all events, the evidence is that after about three years' growing of Texas Red Oats in this State, a black variety, inferior in yield and quality, appears in its midst and from year to year gradually gains upon the original red form, finally becoming predominant. Hence the necessity of buying fresh Texas-grown seed each year.

The Botanical Department of the Kansas Experiment Station has taken up this problem and is conducting an experiment to determine the facts in the case and a possible remedy, if the condition is as reported. A package of seed was secured for experiment this spring, from Mr. J. L. Teagarden, of LaCygne, Kan., a senior short-course student. The seed was of the second crop grown in Kansas, and from optical inspection it was easily apparent that over one-half the seeds were of the black type. Out of a total of 3795 grains, 2309 grains, or 60.8 per cent were of the black variety, while 1486 grains, or 39.2 per cent were the typical Red Texas Oats. Probably a dozen grains of intermediate color appeared and were rejected, only those seeds which were decidedly of the red and black types being retained for experiment. It was found that the individual grains of the red oats are much larger and heavier than those of the black sort, the average weight of 100 grains of the former being 3.02 grams, as compared with a weight of only 2.51 grams for 100 grains of the black variety.

The original sample was divided into two lots and planted April 10, 1906. Part was sown in the ordinary manner, just as would be sown in the field by the farmer. This will furnish material for observation of the supposed change from red to black. From another lot, the red and black seeds were planted separately in several rows each, and sown thinly to allow free stooling, and admit of the study of the individual plants. Still other lots of the separated seeds are being grown in nursery plots 8 x 8 inches apart. A statistical study of the results will reveal the facts. Numbers of plants sown in nursery plots from red and from black seeds will be sacked at pollination time to prevent possible crossing, and the seed thus saved will reveal whether previous crossing accounts for the phenomenon.

H. F. ROBERTS.

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College year begins September 20, 1906. Examination for admission, September 19, at 9 a.m.

Catalogue or other information free, address

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No. 35

The Kansas Corn Breeders' Association and Corn Improvement.

The farmer has for centuries shown great interest in live stock, and has organized associations of breeders for the purpose of furthering the interests of the respective breeds. He, however, has shown much less interest in the improvement of the farm crops. He has planted the ordinary seed of the neighborhood in which he lives, or perhaps has sent to another state, where the conditions are strongly contrasted to his own, and secured seed that has not been at all suited for growing in his locality. He has not made a study of his corn, wheat, or alfalfa as he has of his live stock, and consequently knows very little about the best varieties of these crops to grow, best means of improvement, best methods of culture, etc.

The prices of land and labor are increasing and our economic conditions are changing in such a way that the best methods of farming must be practiced in order to get a fair return on our investments, and the farmer is waking up to the fact that the best way to meet these changed conditions, in the next few years at least, is by study and improvement of his farm crops and by better methods of culture. He is now asking for the best seeds that are adapted to his conditions and is forming organizations for improvement of corn and other farm crops. At the Kansas Experiment Station at Manhattan, eighty to ninety varieties of corn are tested each year, and the yields per acre of grain and stover are carefully taken, and notes are taken on the drouth resistance, date of maturity, grade of corn, and other qualities which determine the value of the corn. Of the one hundred twenty-five varieties tested in the past three years, which include about sixty-five varieties secured from other states, eight of the nine which have given the highest average yields are native corns, showing that each state and each locality must work out its own problems in regard to the improvement of corn. It is necessary that we grow some of the native corns or adopt some of the recognized breeds of the older corn-growing states. Results at the Experiment Station indicate plainly that the former plan is by far the better.

If our native corns are the best for Kansas conditions, the best of these should be included in the Corn Breeders' Association's official list of pure-bred corns, provided they have strong type characteristics, as soon as their merits have been satisfactorily determined. This is what the Kansas Corn Breeders' Association has planned to do. The objects of the association, as enumerated in Article 1, Sec. 2, of the constitution, are as follows: "(1) To establish improved types and breeds of corn which shall in the best possible way meet the needs of Kansas corn growers in various parts of the State; (2) to promote the growing of pure-bred corn for seed purposes throughout the State of Kansas; (3) to furnish a means by which valuable native corns which show purity of breeding may be recognized as pure-bred corns; (4) to establish a bureau for the inspection of the corn grown by the corn breeders of the State and furnish certificates of type and breed for the same; (5) to protect farmers who desire to purchase pure-bred seed-corn, by supplying such information as will enable them to distinguish the different breeds of corn, and furnishing them with the names of reliable growers; (6) to aid in procuring the enactment of such laws and in doing such other acts as shall protect the growers of pure-bred seed-corn in their efforts to furnish farmers with seed-corn of the breed desired, and to further in any way possible the corn-growing interests of the State; (7) to establish a score-card or standard of perfection for each recognized breed of corn."

Article V, Sec. 1, specifies the manner in which a corn may be reorganized as pure-bred: "Any corn may be included as a pure-bred corn under the rules of this association by vote of the association in annual session assembled: (1) Provided, such corn has been bred and selected separate and apart from all other breeds, strains, or varieties for five years or more; (2) Provided, that the board of directors, through at least one of its members or some competent inspector appointed by the board of directors, has carefully examined such corn in locality where grown as to its quality and uniformity of shape, size, color of ears, in regularity of kernels, in filling of butts and tips, in space between rows at crown and tips of kernels, in shape, size, depth and color of kernel, in percentage of shelled corn, in firmness of grain on cob and in composition of kernels as indicated by the proportional size of germ, hard, flinty and starchy portions, and provided also the committee recommends to the association that such corn be recognized as a pure-bred corn; (3) Provided, that the breeder of such corn brings one bushel of selected ears of it to the session of the association at which the as-

sociation votes on the question of recognizing it as a pure-bred corn, and presents to the association a detailed description of the corn, including such history of the breeding and production of the corn as he may be able."

The association wishes to go slow in this matter and has not yet recognized any corns as pure-bred but has recommended the following native corns as desirable ones for growing in Kansas: Hildreth yellow dent; Kansas Sunflower; Hammett White Dent; McAuley's White Dent; Mammoth White Dent; and Griffing Calico. The following varieties originated in other states have been recommended for planting providing they have been adapted to Kansas conditions and have maintained their qualities after having been grown in the State for five successive seasons: Boone County White, Silvermine, Reid's Yellow Dent, Legal Tender, Hogue's Yellow Dent, Leaming, and Pride of the North.

The association holds each year, in connection with its annual meeting, a corn show, in which valuable prizes are offered for the best samples of corn. Expert judges are secured to place the awards, and in this way the best corns are brought out and all the members present are given an object-lesson in judging corn.

The boys' corn growing contest meeting will be held in connection with the annual meeting of the Kansas Corn Breeders' Association, the first week in January, and boys who desire may enter their corn in both contests.

Another contest which the association has provided for is the largest yield from an acre of land, in which suitable prizes are offered. The contestants are allowed to use any corn and any methods of treatment they desire. They are assisted in making the weights and measurements by a responsible person appointed by the Agriculture Department of the College, and one bushel of the corn is sent to the College as a moisture sample, so that all of the yields may be figured to the same (fifteen per cent) moisture content. Entries must be in by the first of September.

V. M. SHOESMITH,
Secretary Kansas Corn Breeders' Association.

A well-kept lawn, no matter if it is not large, with ample shade, clumps of hydrangeas and other shrubbery, and well-kept flower beds, with a modest but attractive dwelling intelligently placed in the midst thereof, and the barn and hog house set well out of view, not only add dollars to the value of the farm, but satisfy the innate yearning of the wife, and compel the school-bred boy and girl to consider home the finest place on the earth.

An Observation Hive.

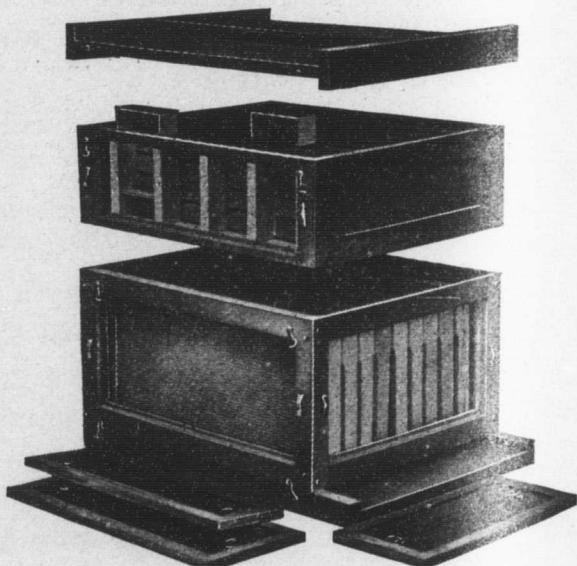
An object of some interest in the zoölogical class room is the new Root observation beehive installed in the east window by Assistant Professor Scheffer. The hive at present is crowded,



like the tenement homes of a large city, with many thousand individuals of more or less pure Italian blood. An exodus of a part of the colony is looked for any day, now that the clover harvest is coming on. The bees gain access to their quarters through an opening beneath the slightly raised window-sash, a part of the space being blocked to prevent their entrance into the class room.

An observation hive is built on a plan calculated to give an observer a good chance to study the industrial and social life of the honey-bee. The sides of the hive are of glass, screened by movable shutters. These shutters must be kept closed except when observations are being made, otherwise the bees will plaster the glass over with wax and propolis. The Root observation hive is precisely the same in dimensions and interior arrangements as the ordinary beehive. It is a one-and-one-half story hive, with eight frames in brood chamber and plain 4x5 sections in super.

Any student interested in bees might, from an inspection of this hive, get some points from which his ingenuity could evolve a simple and cheap hive adapted to his own needs. One observation hive on the market consists of but a single frame; others are more elaborate and cost from twenty to thirty dollars. The Bigelow educational hive is one of the best of these.



Mr. Scheffer is contemplating a museum exhibit, later, of everything pertaining to the bee business and the life history of the bee. This, together with the observation hive, may be expected to stimulate an interest in bee keeping for honey production, especially among those students who come from parts of the State where clover or alfalfa is extensively grown.

About Pasteurization.

[Reply to a correspondent inquiring about results of pasteurization and milk infection.]

"In reply to your inquiry of the 27th, pasteurization will improve hand-separator cream of second and third grade, but occasionally the cream is first grade and then, of course, it cannot be improved by pasteurization or any other treatment. The ordinary hand-separator cream is so often second or third grade because farmers in general do not clean their separators thoroughly each time after using.

"Pasteurization merely kills most of the bacteria in milk, and this rids it of the greater part of the undesirable species that cause trouble. If it is then treated with pure culture lactic acid bacteria in the form of 'starter,' all bad flavors will be largely overcome.

"Although pasteurization is done in almost every up-to-date creamery in the United States, on account of the undesirable contamination of the average milk, it is not to be recommended where milk is properly handled. It is more or less detrimental to the digestibility of milk. For instance, (1) the germicidal power possessed by perfectly fresh milk is destroyed. It is the belief that this power affords some protection against pathogenic bacteria which obtain entrance into milk. (2) The albumen is coagulated and made less digestible. (3) The starch-fermenting power is lost. The ferment in the saliva of adults which converts starch into sugar is lacking in that of infants, but the same ferment is present in fresh milk. It is especially necessary that milk given to infants should not be treated thus to destroy this ferment. (4) Long continued heating has a marked effect on milk sugar, which is carmelized, forming brown specks in milk. This, however, rarely appears in pasteurized milk. (5) The condition of fat is altered by melting and the globules tend to unite. Thus the fat is made less digestible and it must again be emulsified before it can be digested. (6) The casein is also affected, as is shown by the fact that it requires a larger amount of rennet for its precipitation and is less readily acted upon by the pepsin and pancreatin than the casein of raw milk.

"Thus we see that pasteurized or sterilized milk is somewhat

abnormal, and in many cases, when fed to infants or feeble persons, is more or less detrimental. Milk, when pasteurized, is only heated to a temperature of from 140 to 185 degrees F., and the changes produced on the different constituents are not as great as those of sterilized milk. The most numerous forms of bacteria are killed; but this affords a chance for some of the more dangerous forms, which have been restricted by the growth of more desirable forms, to multiply rapidly, and with serious results. But if cream for churning be inoculated with a pure culture of bacteria immediately after pasteurizing, the best results are obtained.

"The new bacteria from the pure culture develop rapidly after pasteurization, when they have practically a clear field to work in. They produce the desired flavor in butter and the normal souring of cream. Pasteurization need not be done where absolute cleanliness prevails in dairy barn, milk wagons, and creamery. It is merely done to rid the milk of bacterial contamination from filthy sources. It is the lesser of two evils. The ordinary hand separator cream is improved to such an extent that the butter made from it will score from one to five points higher, and will bring one to three cents more per pound than if left unpasteurized. There is practically no difference in the yield of butter from pasteurized and unpasteurized cream, although it has been claimed that unpasteurized cream gives a slightly larger yield. The keeping quality of butter is materially aided by pasteurizing the cream, for the putrificative bacteria coming from unclean sources, if left in the cream, naturally get into the butter and prevent its keeping as long as it otherwise would."

C. W. MELICK.

Crop Management.

I cannot here go into details on this subject in discussing the planting, culture, harvesting, storing and marketing of the several staple farm crops. In general, successful farming depends upon doing everything at the right time and in the right way. The farmer should push his work and not allow his work to push him. After a crop has been grown it should not be lost or allowed to become damaged by a little carelessness in handling or storing, through the negligence of the farmer. The quality of wheat and other grain is often seriously injured by harvesting too late, by leaving in the shock too long, by wetting or heating in the stack because of careless stacking, and by threshing and storing damp grain, resulting in bin-burning, etc. Often wheat which might

have graded No. 1 or No. 2 grades No. 3 and 4 or is rejected simply because of the neglect in taking proper care of the grain.

Much of the wheat sold grades low on account of being mixed or not pure in type. Farmers should grow well-bred, pure types of wheat, corn, and other grains. Nine-tenths of all the corn which the farmer sells grades as mixed corn because it is not pure in color. Pure white or pure yellow corn of the same quality as mixed corn will often sell for two or three cents more per bushel.

The subject of crop breeding is now attracting great attention. It pays to breed and grow pure varieties of corn and other crops as well as to observe the same conditions in the raising of live stock. I believe that farmers should store and hold their grain longer and not sell so largely at harvest time. This practice throws a surplus of grain on the market, which usually results in low prices and less profits to the farmer, and perhaps not always greater profits to the dealer. Grain may be stored and kept for a time in small quantities with less loss to the growers than to the dealers when the same grain is bought and stored in large quantities. This is especially true with corn, much of which is sold in the fall and early winter, too damp to keep well when stored in large quantities. It is true also of wheat and other grain that when hauled from the threshing machine it may be too damp to store in large elevators. There is a risk to the dealers in handling such grain, hence the low prices. Also, doubtless there is a tendency on the part of the dealers to make as low prices as possible when the farmer sells the bulk of his crop. Some farmers are obliged to sell at once as soon as the crop has been harvested or threshed, needing the money and having perhaps no suitable storage room. But this is a hand-to-mouth method of living and farming and the thrifty, experienced farmer should make himself independent of such conditions as soon as possible.

From the results of several trials at different experiment stations, it appears that the shrinkage of grain put into the bin in good condition is very slight, and corn put into the crib in the fall fairly well cured and dry will not lose over ten per cent in weight during the four or five winter months, the shrinkage usually being much less proportionately than the rise in price. Also, as sold in the fall ten to fifteen per cent greater weight per bushel of ear corn is required by dealers than is required in the winter or spring.

A farmer should watch the market and take advantage to sell at the highest prices. A good seller is usually a successful farmer. Farmers should give more attention to the marketing of their products in this day of trusts and combinations. Farmers should co-

operate and protect their interests in maintaining fair prices for their products. But let us urge as well that every farmer by his own efforts as well as by coöperation, seek first to prepare for the market a prime article, which on its own merit will bring the highest price.

A. M. TEN EYCK.

Fireless Cookery.

The cost of the fuel used in the preparation of food greatly increases the cost of that article if it is of a variety which requires long cooking. There have been many efforts to lessen this expense, and also to avoid the excess of heat usually dissipated in the surrounding atmosphere. The Aladdin oven, invented by Edward Atkinson, had these objects as reasons for its production.

The Germans and Scandinavians have learned many economical methods of food preparations, one of which has attracted widespread attention in the United States and is known as "fireless cookery." It is not, as the name would indicate, cooking without fire, but is cooking in which there is a minimum amount of fuel required. The foods are brought to boiling temperature, then placed in air-tight receptacles and packed with some loose non-conducting material.

Two young women in the Domestic Science Department are working their theses experiments by a series of trials with cookery boxes. They are using hay, asbestos, mineral wool and real wool as their packing materials, and boxes about eighteen inches in each dimension as stoves. Stone jars, tin pails or iron pots, if provided with close covers, serve as cooking utensils.

Materials requiring long cooking and those foods that do not deteriorate when kept for a time after being cooked are the ones now being experimented with. The final conclusions will be reported at the close of the experiments. This is already evident; that any tight box, such as an old churn, may be used; that mineral wool is inexpensive and effective as a packing material; that meats and cereals can be successfully prepared, and that all kinds of food can be kept hot for ten or twelve hours. Knowing these facts, the possibility of varied use becomes evident. The woman absent from home all day, the camper, the picnicker, the night worker, all these would find many uses for the "fireless cooker." In army life it is a proven success, as food has been conveyed long distances and served hot at the close of a day's march without the delay here-to-fore inevitable.

To what extent the food cooked by this method may be varied is yet an unsettled question, and is one of the problems the young women are attempting to solve.

HENRIETTA W. CALVIN.

THE INDUSTRIALIST

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Local Notes.

At Manhattan Athletic Park, Monday, May 21: Jayhawkers, 6, Farmers, 4.

The girls' and boys' rooters clubs and the ball team entertained the K. U. ball team at Kedzie Hall Monday evening.

Saturday, May 26, the K. S. A. C. alumni, former students and their friends of Chicago will have a picnic in Lincoln park.

Owing to rains and bad roads the contractors of the new Horticultural Hall and the big smoke-stack have not made headway this week.

This year it is Professor Kammeyer who earns the blue ribbon for the best faculty garden. Professor McFarland confesses that he is half a horse-length behind.

Assistant Brandt, of the Architectural Department, is working on the diplomas. It is no small job to fill the one hundred blanks with the required ornamental insertions.

Assistant Harry Brown, of the Music Department, went to Wamego last Tuesday with five members of the orchestra to furnish music for the production at the opera-house of "The Clansman."

Professor Walters addressed the Manhattan Grange last Wednesday afternoon, at their picnic on the Hays farm, six miles north of Manhattan. He spoke of "The Qualities that Make Life a Success."

Instructor Marguerite Barbour has arranged for a public drill by her calisthenics classes on the east campus on Tuesday, May 29, at 4:00 P. M. The College orchestra will intersperse the program with music.

Mr. W. E. Harkness, engineer of the Western Electrical Company, of Chicago, addressed the engineers and architects during the fourth hour on Tuesday on "Telephone Systems and Telephone Engineering." He selected four electrical engineering seniors for positions with his company.

The graduating class of the Manhattan high school held their commencement exercises last Thursday evening at the Congregational church, which was beautifully decorated for the occasion. The "piece de resistance" in the decorations was a steamship model carrying the class motto "Launched but Whither Bound." In the class of twenty-six were fifteen boys and eleven girls, two of whom traced their ancestry back to far-off Etheopia.—*Manhattan Republic.*

The farmer boy has the best chance in life and is usually able to fill every position that is open. He does in his youth the hard, difficult things that call for pluck, a sound body and a fertile brain. Three cheers for the farmer boy!

The military ball given in the Commercial Club Hall by the members of the cadet battalion Monday night was a success in every way. There was a large attendance. The decorations were very appropriate, the music was good and all who attended report a "big time."

The excursion to this College from Norton over the Rock Island railroad, arranged for Tuesday, May 29, has been postponed to Thursday, June 7. It is expected that 400 to 600 persons will come here on that date. The Manhattan Commercial Club has notified the papers of the different towns that when the excursion comes the Club rooms will be open and the excursionists are invited to make it headquarters, leave their luggage, lunch and wraps there.

Each day is a furrow lying before us; our thoughts, desires and actions are the seed that each minute we drop into it without seeming to perceive it. The furrow finished, we commence upon another, then another, and again another; each day presents a fresh one, and so on to the end of life . . . sowing, ever sowing. And all we have sown springs up, grows, and bears fruit almost unknown to us. Even if by chance we cast a backward glance, we fail to recognize our work.

Edwin Finley, a first-year student, died Friday of last week from peritonitis. He was taken sick the preceding Sunday and was removed to the Parkview hospital for treatment. His father and mother came to help care for him and were with him at the end. The body was taken to his home, in Lawrenceburg, Saturday and buried Sunday. Edwin Finley entered College here last fall and at once took position as an athlete. He was six feet two, weighed one hundred ninety-five pounds, and was but nineteen years of age. This death is one of those sad events of life the reason for which remains shrouded in inexplicable mystery.

A bright and happy delegation of about 50 pupils and a number of teachers from the country schools of Franklin county, chaperoned by Supt. J. E. Baker, of Ottawa, visited College in a body last Thursday afternoon. Accompanied by President Nichols, and Mr. Miller, secretary of farmers' institutes, who worked up the excursion, they made a survey of the experimental grounds, the stock pens, the shops, the laboratories and museums, and seemed to be interested in everything they saw. The young women spent most of their time in the domestic science class rooms and laboratory, and a number of them told Prof. Henrietta Calvin that they would enter her course next fall. In the evening they gathered in Professor McKeever's class room where Professor Walters gave them a talk on the history, aims and methods of the Agricultural College. Such excursions must result in mutual benefit to the schools and the College and deserve to be encouraged.

Contractor Stingley, of the new Horticultural Hall, has commenced the erection of the south portal of the building. The Romanesque columns flanking the doorway are in position and look decidedly handsome with their carved capitals and lintels. The arch will have a diameter of about eighteen feet. Its quoins are cut and ready for setting. They measure one by two by four feet and weigh about a ton each.

A proof that our senior students concern themselves with more practical things than the derivation of Hindu-German verbs or the woes of Ancient Greece is furnished by the fact that about half of them are engaged in original thesis work that requires laboratory demonstration, shop construction, or extensive composition on the drawing table. E. D. Richardson is building a forty horse-power gasoline engine. Ramsey and Ferris are constructing a 5000-pound capacity traction dynamometer. Davis and White, of the electrical engineering course, are designing and building an electrical separator to separate iron and brass filings in machine shops. Hazen and Harrison, of the farmers' course, have drawn, specified and blueprinted a large modern farm barn. H. Spuhler, of the architectural course, is getting up complete drawings and specifications for a modern library building. E. J. Evans, of the same course, is drawing and specifying a town hall, and R. H. Sanneman, of the same course, is getting up a complete set of drawings and specifications of a new administration building for the Agricultural College.

Alumni and Former Students.

Warren Knaus, '82, of McPherson, has a four-page article on "Recently Collected Coleoptera" in the *Canadian Entomologist*.

Rev. C. G. Clarke, '88, pastor of the First Congregational Church of Minneapolis, Minn., has given such good satisfaction to his parishioners that they have recently raised his salary to a very handsome figure.

Laurence Brink, a senior special here two years ago, has been appointed one of the six commencement speakers at the University of Rochester. The appointment was made by the faculty on the ground of superior scholarship and ability as a writer.

C. W. Fryhofer, '05, after a short time at his home is now at Manchester, Iowa, where he is working for the Government, inspecting butter for the Navy. He expects to be there until about the middle of July. Mr. Fryhofer had an interesting article on "New England vs. Kansas Dairying" in the *Kansas Advocate* for May 7.

F. W. Wilson, '05, animal husbandman, Experiment Station, Phoenix, Ariz., has reason to feel proud of his reappointment for the coming year with an increased salary that is large enough to be a credit to a much older man. The success of our graduates reflects credit upon the College, and this fact stimulates them to extra efforts.

Valentine Maelzer, '97, has up to a recent date neglected to inform us that he took a wife unto himself about a year ago, but such it seems is the case. This spring he submitted proof of a five years' residence on a homestead, by which he has come into possession of a farm.

Winifred Johnson, '05, who had visited her sister Anna and other friends in Kansas City for a few days, stopped off on her way home, Friday, and renewed acquaintance with friends in Manhattan and around College. A number of classmates met her Saturday evening at the home of Crete Spencer, '05, and had a jolly reunion. She returned home Monday.

Press Notices.

The Farm Department of the Kansas State Agricultural College is experimenting on early, medium and late cutting of Alfalfa, to determine both the total yield and the quickness of starting after each cutting.

The Animal Husbandry Department of the Kansas State Agricultural College reports the following averages in litters of pigs this spring: Poland China, 7; Berkshire, $8\frac{2}{3}$; Durocs, $9\frac{1}{2}$; Tamworths, $9\frac{2}{3}$; Yorkshires, $10\frac{1}{2}$.

Mr. W. E. Harkness, of Chicago, of the Great Western Electrical Company, visited the Kansas State Agricultural College on last Tuesday and engaged four of the graduates of the Electrical Engineering course for work in that great establishment next year.

R. M. Newland and L. A. Ramsey, two graduates of the mechanical engineering course of the Kansas State Agricultural College, have been engaged by the York Manufacturing Company, of York, Penn., a large establishment for the making of ice and refrigerating plants.

The Dairy Department of the Kansas State Agricultural College, has just installed a milking machine. It is equipped for milking eight cows at a time. At St. Louis these machines did most excellent work. Visitors to the College this summer will have an opportunity to see the first milking machine ever used in Kansas.

The Shawnee County Horticultural Society and the three farmers' institutes of that county will visit the Kansas State Agricultural College on August 9. The College will arrange for a special train and a very low rate for the occasion. Why not have many of these meetings at the College this summer?

G. E. Yerkes, who graduated this year from the Kansas State Agricultural College, had specialized in horticulture, and was excused last month in order to become Government forester at Fort Riley. Renwick Green, another graduate in horticulture, was excused in April and made assistant horticulturist at the Hays Branch Experiment Station.

Three graduates of the Kansas State Agricultural College who have specialized in architecture will open up offices as architects and contractors immediately after graduation.

The Kansas Poland China Breeders' Association will meet at the Kansas State Agricultural College the first week in January. The Corn Breeders' Association will also meet there at the same time.

The Kansas State Agricultural College is planning to present the great subject of "Agriculture in the Schools" at many teachers' institutes this summer. All correspondence should be addressed to Secretary J. H. Miller, Manhattan. All correspondence relating to speakers from the College for summer picnics or other meetings should also be addressed to him.

County Superintendent Baker, of Franklin county, secured a special car and conducted a party of sixty farmers' boys and girls to the Kansas State Agricultural College on Thursday, May 24. The afternoon was spent in visiting the experimental field and garden plots and the Mechanical Shops, barns, Dairy, Horticultural, Agricultural and Domestic Science buildings and the Printing Department.

The Kansas State Agricultural College has been asked for so much help at county fairs, in judging stock, fruit, and grains, that arrangements are now being made to accommodate all fairs that care for such help. Requests should be made early, however. It is recommended that "boys' judging classes" be organized at these fairs. Address correspondence to Secretary Farmers' Institutes, Manhattan.

The Botanical Department of the Kansas State Agricultural College is engaged in an experiment to determine the efficacy of formaldehyde in the treatment of the smut on Kafir-corn and sorghum. A considerable number of different lots of badly smutted Kafir-corn seed, which have been treated with different percents of formaldehyde for different lengths of time have been planted, together with an untreated lot for comparison. Smutted Kafir-corn and sorghum are all too frequent occurrences, and a chief and efficient remedy is a prime necessity.

The Entomology Department of the Agricultural College is now experimenting on various methods of exterminating pocket-gophers. Assistant Scheffer has made two tests of a scheme originated by a man in Lincoln county, by which carbon-bisulphide gas is pumped into the runways. The gas generator consists of a common coal-oil can with a tin tube running down into the can, to which a small bellows is attached, and then another tube extends out of the can pointing into the runways. He is also trying several special traps for catching gophers. So far nothing is so satisfactory as the poison which has been made here at the College for several years and sold to farmers at cost—\$1.15 per quart, which is enough to poison several thousand of these pests. Mr. Scheffer is anxious to have reports from all infested localities.

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Catalogue or other information free, address

E. R. Nichols, President
Manhattan, -- Kansas

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THE INDUSTRIALIST.

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MANHATTAN, KAN., JUNE 2, 1906.

No. 36

Chemical Fertilizers for Wheat.

Few experiments have been made at this Station in using chemical fertilizers on wheat. Some experiments were made several years ago in manuring land for wheat, and tests have also been made in the use of salt and land plaster. On spring grains we have made some tests with phosphate, potash and nitrogen chemical fertilizers during the past two seasons.

With barley the phosphate and nitrogen fertilizers have given increased yields, but little increase in crop has resulted in using the fertilizers on the oats. As to whether it will pay to use chemical fertilizers on wheat depends largely upon the physical and chemical needs of the soil. Usually land which has been farmed to wheat for a long time is in a bad physical condition and needs a rotation of crops rather than the use of chemical fertilizers. The humus of the soil is probably largely exhausted, which causes a compact texture unfavorable to plant growth. By growing cow-peas or soy-beans as annual crops, or alfalfa, clover, and grasses as perennial crops, the supply of humus and nitrogen in such land may be increased and the physical condition improved. Also, lands kept continually in wheat become foul with weeds and infected with the diseases which injure wheat. By growing corn and other cultivated crops and giving thorough tillage and cultivation the land will be much benefitted, resulting in larger crops of wheat and a better quality of grain after the rotation with corn, legumes, and grasses.

It is impossible to advise what chemical fertilizers to use on any land, since this can only be determined by actual test. On the upland soil of the Station farm phosphate and nitrogen fertilizers have given better results with grain than potash fertilizers. Kansas soils are not usually apt to be deficient in potash.

For information regarding the testing and use of fertilizers, I refer you to No. 90, Vol. XXIII, Report of the Kansas State Board of Agriculture for the Quarter ending June, 1904. This publication also gives the addresses of the fertilizer companies licensed to sell fertilizers in this State, with a list of the brands and composition of the fertilizers sold.

There will be no injurious effect on the soil by applying chemical fertilizers in reasonable quantities. It is possible to injure the land by applying lime, land plaster or salt too liberally. These substances are really not fertilizers in the sense that potash, phosphoric acid and nitrogen are fertilizers; rather they are stimulants or indirect fertilizers, since their action on the soil is to liberate the plant-food already contained there. Also, in some cases they improve the soil texture, but their continued use results in exhausting the fertility of the soil. Old lands which have become acid are often benefitted by a light application of lime or land plaster, but this should not be repeated often.

If land is in poor tilth and exhausted in fertility, better discontinue the growing of wheat upon it, rotating with crops mentioned above, adding fertilizers such as phosphates, potash, lime and land plaster to the grasses and legume crops rather than to wheat. In this way the soil fertility may actually be increased, and at the same time larger crops of grass, alfalfa or clover may be harvested.

A. M. TEN EYCK.

Industrial Education at Kansas State Agricultural College.

Educators and thoughtful men outside of educational walks have long contended that our school work was too one-sided—too much training of intellect through books and not enough brain training through scientific exercise of the hands. And so all over the country effort is being put forth to educate teachers in so-called manual training or industrial work.

The department is known as the Mechanical Engineering Department, and is in charge of Prof. E. B. McCormick. Mechanics' Hall is a large two-story building, with rooms for bench work in wood, with benches and tools for 220 students, wood-turning and pattern-room, drafting-room, machine-shop 40x80, blacksmith-shop 40x50, iron foundry 40x50, brass foundry 16x30, pipe-fitting room 18x50, engineering laboratory 35x40, etc., etc., with total equipment worth over \$35,000.

Every first-year student is required to take two terms of simple carpentry and one term of blacksmithing. It is remarkable what fine pieces of work the young men turn out. The first term is devoted largely to training in handling tools and care of tools with simple joinery, while in the second term more intricate work is turned out. This is intended to give to all boys, whether intending to go back to the farm or to take up any other calling, a good training in woodwork. It is a good mental training aside from the great practical value to the student, no matter what his future vo-

cation may be. There is really more interest with most students in the blacksmithing work than in the woodwork. The work of the first term in blacksmithing consists of exercises in forging and welding common iron, mild steel, and Norway iron. One of the exercises is the making of a complete chain. The second term of blacksmithing is given to engineering students and such as may elect it, and consists principally in forging, annealing and tempering high grades of tool steel.

Students may continue in either woodwork or ironwork in the shops for the full four years, if they have the time, while taking the course in agriculture. Many students drop into the shops for a term's work whenever their regular studies will permit. Thus they can get drill in simple and complex joinery, making doors, windows, sashes, tables, desks, attending to repairs on College buildings, planning simple sheds, barns, houses, etc.

The young men who choose the regular course in mechanical engineering have a most thorough training in wood, iron and brass work, turning out all sorts of machines and machinery. One student who graduates this year, a farm boy from Mitchell county, has been working all year on a four-cylinder gasoline traction-engine, forty horse-power. This engine, aside from the two heavy wheels, was made in the College shops by students, and is being built by this student and student assistants, under direction of Professor McCormick. Students have drill in running and building gas-engines and steam-engines and in making and testing all kinds of castings.

Now you ask, What then? The graduates from the mechanical engineering course are to be found back on the farm, in great railroad shops, in manufacturing plants of all kinds, teaching manual training in preparatory schools, in drafting offices, etc. Kansas farm boys have all sorts of talent, and the United States Government and the State of Kansas want each boy so trained as to be able to be of the most use in the world. One of the best features of this work is the training in executive ability which so often comes as a result from a thorough industrial course. Some of these young men have gone out and in a few months have been put in charge of large departments with large forces of men, practically all of them much older in years. The graduates are eagerly sought for. Professor McCormick has received letters from over a dozen large establishments asking for from two to four men each. He could have placed thirty graduates, had he had that many, in good positions. All who have been sent out in the past have "made good." While the department offers a most complete training for

men who want to fit themselves for special work in mechanical engineering, equal to that provided in any other institution in the West, and at about half the cost, the most valuable feature of the department to the average mind is the practical manual and intellectual training offered to all the young men in the College.

Smut in Wheat.

It is true that seed-wheat may be successfully treated so as to destroy smut and give practically a clean crop from smutty seed. The best remedy for smut in wheat is to treat the seed with a solution of formaldehyde, using one pound 40 per cent strength of formaldehyde to 45 or 50 gallons of water. Either spray the wheat or dip it in a barrel or tank, taking care that the grain is thoroughly wet, then spread it quite thinly over the floor and allow it to dry from twelve to twenty-four hours, shoveling it over once or twice. The usual method is to treat one day the seed that is sown the next day. The wheat will swell and in order to sow the required amount per acre the drill should be set to sow about one-fifth to one-fourth more than the usual amount.

The purpose of this treatment with formaldehyde is to destroy the smut spores which adhere to the wheat kernels. When smutty wheat is threshed the smut balls break and the fine smut dust, which is really the seeds of the smut, is spread over sound kernels of wheat. Some of these little smut seeds or spores adhere to the wheat kernels and when such wheat is planted these spores sprout and the fungus infects the tender tissues of the germinating wheat seed; the smut plant grows within the wheat plant and feeds upon its sap and tissues, finally producing the smut in the head of the wheat in place of the wheat kernels. If these smut spores adhering to the wheat grains are destroyed there is little chance for the smut spores which remain in the soil to come in contact with the wheat kernels or the young growing wheat plants, hence the seed-wheat treated with a solution of formaldehyde produces a crop which is practically free from smut.

There is no danger of injuring the seed by using formaldehyde of the strength of solution described above. In fact, experiments have shown that the treatment actually improves the wheat. As an average for a large number of experiments at the North Dakota Experiment Station, Prof. L. H. Bolley found that treating sound wheat free from smut with the formaldehyde solution gave increased yields, as compared with the crop from untreated seed, by over two bushels per acre. Every farmer who has smut in his wheat ought to treat the seed. There is no use in growing smutty

wheat. The formaldehyde may be purchased from almost any druggist; at least any druggist can secure it for you. Be sure to get the full 40 per cent strength solution of formaldehyde.

A. M. TEN EYCK.

Smut of Barley and Oats.

There are two general classes of grain smut, the loose smut and the hidden or covered smut. The loose smut of wheat, oats, barley, etc., fruits about the time the grain heads, the affected spikes having their flower parts changed into a dusty dark-brown mass, which gradually separates, the dust-like spores being blown about by the wind, until eventually there remains only the naked rachis or flowering spike. Some of these spores, which are really the seeds of the smut, lodge in the flowers or beneath the glumes which enclose the developing kernels of grain. Probably these spores usually germinate and start a young smut plant, which infects the growing seed. As the grain matures the growth of the smut plant is checked, and it remains with the seed in a dormant condition until favorable conditions for growth again occur when the grain is planted, when, as the seed germinates the smut plant again renews its growth and, growing within the tissues of its host plant and feeding upon it, forms its fruit at about the flowering stage of the grain, as already described.

This loose smut is not readily destroyed or prevented. Very severe treatment is required in order to destroy the young smut plant within the seed grain. In the experiments which have been made the hot water treatment has been the most effective, the plan being to treat the seed several times, or after soaking it for several hours to treat it with hot water at 135° Farenheit, for about fifteen minutes. By giving two or three treatments with formaldehyde the loose smut may be largely destroyed. The method practised is to treat the seed either by dipping or spraying, taking care that the grain is thoroughly wet, when it is allowed to remain in a pile for several hours and the treatment repeated. Generally, loose smut is not so prevalent and the damage which it causes is not so great as to necessitate treatment of seed grain for its prevention. It would be advisable, however, where loose smut occurs to any extent in a crop, to treat a small amount of seed carefully so as to destroy the smut and plant it on clean land in order that a clean crop of grain may be grown which may be used for seed another year.

The other class of grain smut, such as the stinking smut of wheat, hidden smut of oats, and covered smut of barley, form

their spores within the grain covering, forming enlarged smutted kernels, leaving the glumes entirely free so that an infected spike has much the same appearance as a healthy one. For this reason the smut is easily overlooked in the field, but is observed at threshing time and after the grain is threshed. The spores which adhere to the sound kernels cause the infection of the next crop, as already described in discussing wheat smut. These smuts are more susceptible to treatment, the practical remedy being the use of the formaldehyde solution in the manner already described.

In treating oats and barley care must be taken to thoroughly wet the grain with the formaldehyde solution. If the oats are dipped in a tank containing the solution they should be shoveled over several times in order to insure a thorough wetting of the grains. The spores of smut are often protected beneath the chaff or hull of the oats, hence the necessity of taking great care to thoroughly wet the hull. In the same way if the oats are sprinkled on the floor it is necessary to shovel them over and sprinkle them very thoroughly, and it is often advisable to allow the grain to lie in the pile several hours, then shovel it over and give it a second spraying with the formaldehyde solution. In order to insure the destruction of smut in barley similar care should be taken in treating this grain. There is no danger of the formaldehyde solution of the strength named (1 pound of 40 per cent formaldehyde to 45 or 50 gallons of water) injuring the seed grain, provided care is taken not to allow the grain to heat in the pile after it is treated. When the treatment is finished the grain should be spread out in a thin layer over a tight floor and shoveled over at intervals until it is dry on the outside, when it may be sown with the ordinary grain drill.

A. M. TEN EYCK.

The people of Switzerland realize biddy's importance. A grand fete was celebrated there recently for a hen which that day had laid her thousandth egg. Every house in the village displayed flags, and the villagers, headed by a band of music, marched to the home of the lucky owner, who spread a banquet in the hen's honor.

Last year the exports of American bread-stuffs were valued at \$146,000,000. This does not look as if there were much foundation for the assertion that we should soon need all our grain to feed our own people. There is no reason in sight why the United States should not continue to retain its title of the granary of the world for a long time to come.

THE INDUSTRIALIST

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Local Notes.

The peach crop is safe.

K. S. A. C. *versus* Washburn College, on Decoration Day, at the Manhattan Athletic Park—4:0.

The program of the Commencement exercises will be found on the last page of the INDUSTRIALIST.

Another victory at the athletic park! K. S. A. C. 8, Friends University 0, is the score of the baseball game last Saturday.

About twenty engineers accompanied by Professor McCormick went to Kansas City on Monday to visit a number of machine-shops and power-houses.

Student Henry Brinkman, of the architectural course, has found time to prepare drawings and specifications for a new residence for John Peak, of Manhattan. It will be modern, convenient, and a thing of beauty.

The electrical engineers went to Topeka on Monday to study the electric light plant and the power-house for the electric street-car system of that city. Professors Hamilton and Anderson accompanied the party and explained the machinery.

Prof. J. D. Walters, the senior of the Faculty, says that the approaching Commencement will be his thirtieth at this College. There are but two educators in the State who have held their chairs longer than Professor Walters—they are Professors Snow and Miller, of the State University.

Assistant M. S. Brandt will leave for his home, near Boston, on June 9 and return to Colorado about July 1, where he will work in his former position at Camp Sunshine as mining engineer till September, when College begins. He says that a "working vacation" is the best for a young man and that he could not think of any other kind.

The score of the colleges who took part in the intercollegiate track meet at Topeka on Monday was, Agricultural College, 56; College of Emporia, 39½; Kansas State Normal, 24; Washburn, 18½; Fairmount, 15; Cooper, 7; St. Marys, 5. This is the biggest event of the year in athletics and speaks well for the work of our boys and of Coach Melick.

C. E. Whipple, otherwise known as "Papa" by the students, received a telegraphic offer of a good position in the government service on the Isthmus of Panama, Monday evening. He will probably accept, and if so will leave for Colon after Commencement. Whipple is one of the most prominent student leaders in College and played center on last fall's football team.—*Mercury*.

The annual catalogue has been in the State printing-office for several weeks, but owing to the removing of the presses and paraphernalia to the new building provided by the last legislature the State printer informs us that he may be unable to complete the printing and binding of the pamphlet before the middle of June. We regret this delay. A copy of the catalogue will be mailed to each student as soon as it arrives from Topeka.

Student Assistant J. L. Pelham, of the Horticultural Department, who was last year an assistant at the Hays Experiment Station and this year special student of horticulture in this College, has been engaged by the Dean of the Agricultural College of Nebraska to lecture this summer at Nebraska teachers' institutes. He will give ten lectures and five demonstrations at each of at least four institutes. In the fall he will return to Manhattan and join the senior class as a regular student.

The annual exhibition by the girls' physical training classes was given on the campus Tuesday afternoon. About seventy girls dressed in gymnasium suits took part and went through the various drills without a hitch. After the grand march they gave the tennis, rose, rope and May-pole drills, and finished by a May-pole dance that was the best ever seen on the campus. The drills spoke well for the ability and originality of Director Marguerite E. Barbour, of the Physical Training Department. About one thousand students and town people were present.

Little Gertrude Brink, the fourteen-year-old daughter of Professor and Mrs. Brink, of this College, died at sunrise, on Saturday, May 26, of typhoid pneumonia. The burial services were held Sunday afternoon, Rev. A. W. Atkinson of the Manhattan Baptist church officiating, and six young girl schoolmates serving as bearers. Gertrude was a bright girl, well liked by all her young friends, and the idol of her parents and brothers. She bore her prolonged illness with fortitude. Her beautiful character endeared her to every one who came in contact with her, and the memory of this dear young life will long remain with all who knew her.

Professors Cortelyou and Price were called out by the students last Thursday morning after chapel exercises, and knowing what the handclapping and cheering meant they both made their bows and speeches. Both acknowledged the safe arrival at their homes of young assistants and pledged themselves that in about sixteen years or more the youngsters should attend the glorious Kansas State Agricultural College and reenforce its ever-victorious athletic team. Professor Cortelyou spoke in German. He said: "Mein Yunge ist ein tüchtiger Kerl. Er gibt jetzt schon Anzeichen dass er seiner Zeit ein Athlete werden wird. Ich weiss er hat gute Lungen und starke Arme und Beine." Professor McCormick, who is also celebrating the arrival of an assistant in his home, will be called out as soon as he visits chapel. He had better get his speech ready.

The deferred Rock Island excursion from Norton and intermediate points to the Agricultural College will arrive at Manhattan at 10:30 A. M. next Thursday morning, and will leave at 6:00 P. M. It is expected that between 400 and 600 people will visit College on this occasion. The Manhattan Commercial Club will open its rooms to the visitors, for rest and basket lunches. The College band will give an open-air concert in the afternoon, and President Nichols will see that guides will escort visiting parties to all parts of the campus. Every door will be open and all will be made welcome.

The Dairy Department received their much-talked-of milking machine last week. It will milk eight cows at a time, and is the first machine of its kind in Kansas. Milking machines are not a new thing. Inventors have tried for years to produce practical contrivances for this purpose, but the dairy men have so far refused to consider them seriously. The local editor used a hand vacuum pump machine in the experiment station of Turgovia, Switzerland, nearly forty years ago, and if it had not been for the occasional objections of a nervous cow to stand pat that machine, which was then in use on many dairy farms in southern Germany and Hungaria, might have solved the problem. But the cows objected to the milk extractor so frequently that its use was discontinued. Whether the new machine, which will be described in a future number of the INDUSTRIALIST, will give satisfaction, we can not predict. Its first trials are highly satisfactory.

The first intercollegiate track meet of Kansas took place last Monday in Topeka and victorious floats the purple and white of the Kansas State Agricultural College. Fleet of foot, lithe and sinewy in muscle, the sons of the great technical school at Manhattan scored a total of 56 points—one more than prescribed by the Kansas conference as sufficient to be accorded first place. A plurality constitutes of course an actual victory, but 55 points must be registered by one college in order for it to receive the official brand of having won the meet. In five different events was the Agricultural College first—in the 100-yard dash, in the pole vault, in the mile run, in the 440-yard dash, and in the relay race. Six times were "seconds" captured. Three times did the purple and white breast the tape third, and three times were fourth honors won. It is a great record, and doubly sweet is the victory, because Monday afternoon's great meet at the fair grounds in Topeka was the first of what hereafter is to be an annual test of skill and prowess on track and field of Kansas college athletes.

Alumni and Former Students.

Jessie A. Sweet, '05, has been appointed to the very important position of matron of the State Hospital at Topeka. As such she will be in charge of all the domestic operations of that large institution, about sixty others being under her direction. Miss Sweet possesses unusual executive ability and will undoubtedly succeed in this responsible position, upon which she enters June 1.

Cora McNutt, who will be graduated next Commencement, will take the position of instructor in domestic science in the Girls' Industrial School at Beloit, July 1.

Sadie (Moore) Foster, '94, and husband suffered the loss of their only child last week. The little boy was something over a year old and had not been in good health for some months.

H. C. Kyle, '03, assistant in agriculture, has been elected assistant in agronomy in the Ohio Experiment Station, Wooster, O. In response to a telegram he left on short notice, last Tuesday. Mr. Kyle is a fine student and should win success in his new field. He certainly carries with him the well wishing of many friends.

A. B. Carnahan, '05, who is employed in the steam turbine department of the General Electric Company, at Lynn, Mass., has just received a very decided promotion. He will be immediately associated with Mr. R. H. Rice, one of the most eminent men of the country in thermodynamics. This promotion is the result of hard, intelligent work on the part of Mr. Carnahan.

Lillie Bridgman, '86, writes to her classmate, Mrs. Henrietta (Willard) Calvin, some sketchy glimpses of her earthquake experiences in San Francisco, from which the following is extracted: "It seems sometimes hours and sometimes minutes, depending on which nerve centers are jiggled, since April 18. The shake was bad at 530 Guerrero street. Though the house did not go down, everything in it did. The heavy marble steps in front were cracked and torn away. We were right on the edge of the part which sank—a block from Valencia street. The first thing I did was to take, by mistake, a mouthful of ammonia. The ammonia bottle had emptied itself into a cup which I thought had water in it. Fortunately I had a lemon, but no water for hours, and my mouth absolutely raw. Everything was so jumbled up that I could not bear to go to work at it, so after the rest of the household were dressed I started out to see the town. It seems now an awfully cold-blooded thing to do, but at the time it seemed natural, and it was the only way to take one's bearings and find out how things really were. Unfounded rumors from other places made our own troubles seem not so bad. I went right down town and retreated before the fires all day. Thursday night the fire reached our part of town and the house went. I saved some clothing, but all my books, pictures and manuscripts went. Nothing seemed worth saving at the time or I could have done better. Friday I spent on the hills and in the park, and Saturday I reached the ferry through some of the most desolate ruins you can imagine. The papers have not exaggerated except in little details they are making up now. I saw nothing resembling a panic or disorder. At first people were too dazed and busy. After that the discipline was fine. There were terrible and pitiful incidents, of course, but very little that could be avoided. I am now at my house in Berkeley and have rented one of the rooms. I have a good friend in a grocery man, who trusts me, and am getting along finely."

THE ALUMNI MEMORIAL FUND.

A month ago the memorial portrait committee appointed by the alumni sent out letters to all the members of the association, soliciting subscriptions. To date only a small part of the members have responded. The amount of cash now in the hands of the committee aggregates \$155. The amount desired to raise is \$1000. It will be impossible to secure satisfactory oil portraits of the three deceased ex-presidents, Jos. Denison, Jno. A. Anderson, and Geo. T. Fairchild, with a much smaller fund.

The committee notes with pleasure the large number of recent graduates who, feeling unable to contribute a larger amount but with a desire to help, have contributed one dollar each.

There remains a very large percentage of the members of the association who have not been heard from. Some of these are able to donate liberally. We hope to receive their subscriptions at once, in order to make a satisfactory showing at the business meeting of the alumni on Commencement Day. You are next.

CHAS. C. SMITH, *Treasurer of Committee.*

THE JAYHAWKER QUESTION.

The committee appointed to ascertain the views of the alumni concerning the *Jayhawker* sent a circular letter, with a return card, to each graduate, and has canvassed the replies received thus far. Of the 170 answers all but seven are favorable to acquiring the *Jayhawker* and issuing it as an alumni magazine. As there are nearly 1000 living graduates, it will be seen that only about 17 per cent of them have taken the trouble to reply. The natural inference is that the 83 per cent either are indifferent in the matter or oppose the suggestion, but do not care to do so actively. If this inference does them injustice, immediate attention to this last call before Commencement is necessary in order that adequate information may be before the association.

Of those replying to the circular, several suggest the formation of a stock company among the alumni, which presumably would consist of those most interested in the venture. This proposition has much merit and should be carefully considered. Such a company would need to consist of enthusiastic individuals who would be willing to take the chances, stand the losses, and wait for the magazine to win financial success by demonstrating its necessity to the alumni. The great majority of those who replied favor supporting the magazine by advertising and subscriptions. A considerable number suggest assessing the alumni or charging annual dues sufficient to meet all expenses, including the cost of the magazine, and then to furnish it to all. The makers of these and kindred suggestions seem to be unaware that the association has absolutely no means of enforcing an assessment or collecting dues. The worst that could be done to a delinquent member would be to cut off his copy of the *Jayhawker*, and that would do nothing toward paying for it. So in the end the magazine will have to be supported by those who want it.

It is evident that the support of four or five times 170 alumni will be necessary to guarantee success, and replies from the other hundreds are respectfully urged. DO IT NOW.

Baby Beef Production with Western Fields.

(Press Bulletin No. 151, Fort Hays Branch Experiment Station.)

In order that the western farmer may realize the most profit from his land for a series of years and still maintain the fertility of the soil, he should not neglect the stock industry. Whether it be hogs or cattle; whether he feed for beef or milk matters little, for in any case a part of each crop taken from the field will be fed on the farm, and returned to the land in the form of barn-yard manure, instead of being shipped direct to other markets. This western soil is fertile, yet not inexhaustible.

Realizing the importance of retaining the fertility of the soil and desiring to be more able to answer requests for information as to the feeding value of various grains, the Fort Hays Branch Experiment Station fed sixty head of calves with feeds that can be grown with a marked degree of certainty in the West. The calves were grade Hereford and Shorthorn, steers and heifers. They had been weaned, and vaccinated for blackleg just previous to putting in the feed lots. The 60 head, averaging 400 pounds each, were uniformly divided into four lots consisting of ten heifers and five steers to the lot, and each bunch fed a different ration. The steers were raised at the Station and the heifers were purchased in the vicinity of Hays.

After taking the average of three successive weighings, the calves were carefully apportioned into lots and each lot of calves was fed roughage for two weeks, after which they were again weighed. These weights of the various lots being sufficiently close, no changes were made and the first grain was fed Dec. 7, 1905, 157 days previous to the close of the experiment.

The four lots of calves were numbered and rations given them as follows:

Lot IV. Fed corn-and-cob-meal and alfalfa hay.

Lot V. Fed ground barley and alfalfa hay.

Lot VI. Fed ground emmer and alfalfa hay.

Lot VII. Fed ground Kafir-corn and alfalfa hay.

In all the feeding, the alfalfa was placed whole in the bottom of the feed troughs and the ground grain poured over it. The cattle were fed twice daily, morning and evening, the grain and hay being weighed out to each lot at every feed. They were started on feed with all the roughage they would clean up, which was an average of 9 pounds per head daily, and with a grain ration of $2\frac{1}{2}$ pounds per head daily. The quantity of grain was gradually increased and the roughage cut down when necessary. The calves took readily to the feed and at no time during the experiment did any of the lots seem to tire of their ration.

The accompanying table gives the total amount of feed eaten, the pounds of grain and hay required to make 100 pounds of gain, the average beginning and closing weights, and daily average gain per head for the entire period, including the preliminary feeding, or 168 days. There were 15 calves in each lot.

TABLE I.

Lot No.	Ration.	Feed.		For 100 pounds Gain.		Av. per head beginning, lbs.	Weights & Gains.	
		Grain lbs.	Hay lbs.	Grain lbs.	Hay lbs.		Av. per head close, lbs.	Gained av. per day, lbs.
IV.	Corn-and-cob-meal and alfalfa.....	22,118	17,524	484	383½	400	704	1.81
V.	Barley and alfalfa.....	17,512	18,349	416	435	395	675	1.66
VI.	Emmer and alfalfa.....	17,174	19,465	430	487	401	667	1.58
VII.	Kafir-corn and alfalfa...	18,574	20,510	457	505	404	675	1.61

It will be observed from the table that lot VII ate more pounds of both grain and hay than any of the other lots, excepting the grain eaten by lot IV, which received corn-and-cob-meal that weighed 70 pounds per bushel instead of 56 pounds per bushel, as Kafir-corn. In the column headed "Grain and Hay for 100 pounds Gain," emmer compares favorably with barley, although a trifle more alfalfa was required to produce 100 pounds gain with emmer than the same gain with the barley ration. It required 54 pounds more of the corn-and-cob-meal, to produce 100 pounds of gain, than of the ground emmer, but with the latter, 103½ pounds more of the roughage was fed than was fed with the corn-and-cob-meal ration. With the Kafir-corn ration more pounds of both grain and hay were required to produce 100 pounds gain than with either the barley or the emmer rations. It should be stated, however, that both emmer and barley are quite laxative feeds, and when fed with alfalfa hay the tendency is to produce looseness when a heavy ration is fed. Because of the experimental feature of the feeding, nothing to counteract this laxativeness of the rations, such as prairie hay or Kafir-corn would have been, was added to either the barley or emmer rations. And it is not unlikely that, had prairie hay been added to both of these rations during the last 70 days of the experiment, the results would have been still more favorable. The emmer-fed calves, up to within seventy days of the close of the test, showed better gains than either of the other lots.

TABLE II.—The Financial Result.

Lot No.	Calves cost.	Feed cost,	Cost of 100 lbs. gain.	Sold for.	Net proceeds.	Profit or loss per head.	Margin between buying and selling price of calves.
IV.....	\$224.92	\$177.14	\$3.89	\$4.75	\$449.11	\$3.13 gain	\$1.00
V.....	222.04	179.95	4.29	4.60	417.25	1.02 gain	0.85
VI.....	225.56	185.12	4.65	4.35	383.07	1.84 loss	0.60
VII.....	227.28	202.83	5.01	4.50	410.59	1.30 loss	0.75

NOTE: In computing cost of feed, local prices for the various feeds were used, *i.e.* ear corn 39c per bushel, corn-meal 42c per bushel, corn-and-cob-meal 42½c per bushel, barley 36c per bushel, emmer 36c per bushel, Kafir-corn 46c per bushel, and alfalfa at \$5 per ton.

The calves were valued at \$3.75 per hundred weight at the beginning of the experiment, which gives a margin of \$1.00 for those of lot IV, 85 cents for lot V, 60 cents for lot VI, and 75 cents for lot VII, between the selling price of the respective lots at the Kansas City Stock Yards, where each lot was sold on its merits, when the experiment closed, and the purchasing price. The cost of 100 pounds of gain ranges from \$3.89 with the corn-and-cob-meal ration, the least expensive, to \$5.01 with Kafir-corn as ration, and most costly; the cost of 100 pounds gain with the barley and emmer rations being \$4.29 and \$4.65 respectively.

In the slaughter test, lot IV dressed 56.5 per cent, lot V, 56.4 per cent, lot VI, 54.7 per cent, and lot VII, 57.3 per cent.

The price per pound for which the calves of the several lots sold indicates very nearly the condition, or ripeness, of the cattle at the time of shipment. The percentage of dressed weight, with the possible exception of lot VII, which dressed out nearly one per cent higher than any of the other lots, compares favorably with the selling prices. The emmer-fed calves did not stand shipping as well as the rest and the shrinkage was nearly two per cent more than with the Kafir-corn-fed cattle. The shrinkage on the entire sixty head was 4.67 per cent.

O. H. ELLING.

Commencement Week

1906

SUNDAY, JUNE 10

Baccalaureate Sermon, College Auditorium, 4 p. m., Rev. Daniel McGurk, Pastor Grand Avenue M. E. Church, Kansas City, Mo.

MONDAY, JUNE 11

Recital by Music Department, College Auditorium, 8 p. m.

TUESDAY, JUNE 12

Examinations from 8:30 a. m. to 2:40 p. m.

Senior Play to Invited Guests, College Auditorium, 8 p. m.

WEDNESDAY, JUNE 13

Examinations from 8:30 a. m. to 11:50 a. m.

Business Meeting Alumni Association, 4:30 p. m.

Informal Reception to Alumni, Women's Gymnasium, 8 p. m.

THURSDAY, JUNE 14

Annual Address, College Auditorium, 10 a. m., Prof. Edwin Erle Sparks, Ph. D., Dean of University College, University of Chicago

Presentation of Diplomas.

Cadet Band Concert, on Campus, 2 p. m.

Military Drill, 3 p. m.

President's Reception to Regents, Faculty, and Invited Guests, East Parkgate, 8 p. m.

The railroads have granted a rate of one and one-third fare for round trip, from all points in Kansas and including Kansas City and St. Joseph, Mo., on the certificate plan, to attend the Commencement exercises and alumni reunion. Tickets on sale June 9 to 13, good returning till June 18. Be sure and take a certificate for each ticket purchased coming. These, when signed by Miss Ada Rice, will enable you to obtain return ticket at one-third fare, provided one hundred certificates are presented.

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OSCAR H. HALSTEAD, B. S. (K. S. A. C.).....	Assistant Professor of Mathematics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.).....	Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....	Asst. Professor of Music
MISS FLORA ROSE, (Framingham Normal), B. S. (K. S. A. C.).....	Asst. Prof. of Domestic Science
VERNON M. SHOESMITH, B. S. (Mich. Agr. College).....	Assistant Professor of Agriculture
WALTER E. MATHEWSON, M. S. (K. S. A. C.).....	Assistant Professor of Chemistry
THEO. H. SCHEFFER, A. M. (Cornell University)	Assistant Professor of Zoology
Miss Ada Rice, B. S. (K. S. A. C.).....	Instructor in English
William L. House.....	Foreman of Carpenter Shop
William Anderson, B. S. (K. S. A. C.).....	Assistant in Physics
Miss Gertrude Barnes.....	Assistant Librarian
Louis Wabnitz.....	Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.)	Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.)	Foreman in Foundry
Geo. A. Dean, B. S. (K. S. A. C.)	Assistant in Entomology
Miss Emma J. Short	Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.)	Assistant in Domestic Art
Miss Maud Coe, B. S. (K. S. A. C.)	Assistant in Domestic Art
Miss Kate Tinkey	Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.)	Assistant in Printing
Miss Caroline Hopps, Ph. B. (University of Chicago)	Assistant in English
Miss Helen Thompson, B. S. (K. S. A. C.)	Assistant in Preparatory Department
Miss Ella Weeks, A. B. (U. of K.)	Assistant in Drawing
R. F. Booth, B. S. (Northwestern)	Assistant in Mathematics
Robert E. Eastman, M. S. (Cornell University)	Assistant in Horticulture
Miss Daisy Zeininger, B. A. (Fairmount)	Assistant in Mathematics
Roy A. Seaton, B. S. (K. S. A. C.)	Assistant in Mathematics
George F. Freeman, B. S. (Ala. Polytech. Inst.)	Assistant in Botany
M. Francis Ahearn, B. S. (Mass. Ag. College)	Foreman of Greenhouses
Miss Cecilia Augspurger (Illinois Wesleyan)	Assistant in Music
Charles W. Melick, B. S. (Neb.)	Assistant in Dairy Husbandry
Miss Alice Loomis, B. S. (K. S. A. C.)	Assistant in Preparatory Department
George P. Jackson, Pn. B. (Chicago)	Assistant in German
Miss Gertrude Stump, B. S. (K. S. A. C.)	Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale)	Assistant in Architecture and Drawing
Howard R. Watkins, M. S. (Iowa State College)	Assistant in Chemistry
Heman A. Wood, B. S. (Olivet)	Assistant in Chemistry
Geo. C. Wheeler, B. S. (K. S. A. C.)	Assistant in Animal Husbandry
Leonard W. Goss, D. V. M. (Ohio University)	Assistant in Veterinary Science
Melvern F. Thomas, B. S. (Texas A. & M. College)	Assistant in Mechanical Engineering
E. B. Milliard	Foreman of Blacksmithing
Miss Alice M. Melton, B. S. (K. S. A. C.)	Clerk in Director's Office
Miss Sarah Hougham, B. S. (K. S. A. C.)	Clerk in Botanical Department
W. H. Closson	Secretary to President
William R. Lewis	Janitor

THE INDUSTRIALIST.

VOL. 32.

MANHATTAN, KAN., JUNE 9, 1906.

No. 37

Retrospect.

THE College year now drawing to a close has been a period of work and growth. It has witnessed another increase in students and teaching force, the inauguration of new lines of research and study, the addition of much illustrative material, the erection of a large and solid Horticultural building, the completion of a roomy addition to the boiler-house, the erection of large stock sheds, and other substantial improvements almost too numerous to mention.

The College and the State take pride in this growth. They feel that the phenomenal development of the institution is the result of work, well directed and properly done, and the INDUSTRIALIST should be pardoned when it proceeds to enumerate in its Commencement number some of the items of expansion. The only regret is that it will be impossible to give credit in every quarter where credit is due, or to mention all lines of growth that deserve mention. The institution is about to complete its forty-third year, and its growth has been such that it has become one of the great educational centers not only of Kansas but of America. It is to-day the most characteristic institution of the State, and the one that stands in closest connection with the various lines of occupation of the people of the West.

THE FACULTY.

The forty-third catalogue, now in the State printing-office and delayed there on account of the removal of the presses and cases of the plant to the new building provided by the last legislature, will enumerate a Faculty of 26 regular professors and heads of departments, 51 assistant professors, instructors, assistants, teachers, and foremen, about fifty student assistants, and a formidable number of permanent employees of the Experiment Station at Manhattan and of the Branch Experiment Station at Hays. These figures do not include the officers of the College battalion and the cadet band.

There have been few changes in the Faculty during the present

year—less than usual—and notwithstanding the many reorganizations of the teaching force the Board of Instruction of the College does not suffer seriously from "lack of continuity." Many western Colleges have suffered more intensely. Consulting the catalogues of past years we find that the heads of the departments can show the following length of service as regular professors or heads of departments.

	Years.
Professor J. D. Walters.....	30
" E. A. Popenoe.....	25
" J. T. Willard.....	18
President E. R. Nichols.....	16
Superintendent Jacob Lund.....	16
" J. D. Rickman.....	8
Principal B. S. McFarland.....	7
Professor B. F. Eyer.....	6
" W. A. McKeever.....	6
" A. Dickens.....	5
" B. L. Remick.....	5
" E. B. McCormick.....	5
" Henrietta W. Calvin.....	5
" A. M. Ten Eyck.....	4
" C. M. Brink.....	4
" Oscar Erf.....	3
" R. R. Price.....	3
Captain P. M. Shaffer.....	3
Professor J. E. Kammeyer.....	3
Librarian Margaret J. Minis.....	3
Doctor F. S. Schoenleber.....	2
Professor J. V. Cortelyou.....	2
Instructor Marguerite E. Barbour.....	2
Professor Olof Valley	2

Several of these were connected with the College as assistants before they became voting members of the Faculty. Professors Willard and Dickens and Miss Minis were doing effective work as teachers of classes for several years before their appointment to the positions they now hold.

THE NEW BUILDINGS.

The most conspicuous improvement of the "College village" now in progress of building is the new Horticultural Hall. Appropriations amounting to \$50,000 were made for this by the last legislature, and the initiatory steps for its erection were taken by the Board of Regents at their April meeting last year, but the over-worked condition at the State Architect's office and the fact that the increase in the cost of building material made necessary a second call for bids retarded the letting of contract till November 4, when the offer of the well-known firm of Stingley Bros. was accepted at \$35,380. The walls of the building are now completed to the window benches of the third story and the contract calls for the completion of the hall by September, so that it will be available for classes next fall term.

The lighting, heating and plumbing is not included in the above contract and will probably be furnished by the Heat and Power Department of the College. Engineer Jacob Lund has built the the heating systems of all the buildings, mostly with student labor. He is thoroughly acquainted with every detail of the extended plant. He knows where every pipe lies and what pranks every valve is liable to play when it tries to get contrary. No outside firm could do nearly so well. It is intended to build a "battery" of new, large and suitable greenhouses directly southeast of the new Horticultural Hall and to add a roomy palm house at the south end of the whole complex.

The new building is practically three stories high and measures 66 feet, 8 inches long by 116 feet 5 inches. It is built of a beautiful substantial white magnesia limestone, found upon the north part of the College farm, and has been finished in the general style of the other large buildings—a kind of simple and common-sense modern Romanesque. It contains 12 large class rooms, 4 roomy offices, 2 vaults, several smaller rooms, several water closets, a store room, and a large and well lighted attic. The building stands on the knoll directly west of the new Dairy Hall, and will be an ornament to the campus. It was drawn and specified by State Architect John F. Stanton, and its erection is being superintended by Prof. John D. Walters, of the Architectural Department of this College.

ADDITIONS TO THE POWER-HOUSE.

Last summer and fall the College erected a 40 by 51 foot annex to the power-house, large enough to shelter several hundred-fifty horse-power boilers, and installed a new boiler. Three more boilers will be set up within a year. It also commenced the erection of an additional smoke-stack, which will have a capacity of from twelve hundred to two thousand horse-power. This smoke-stack will be reared on the west side of the power-house. It will be 156 feet high, *i. e.*, over 50 feet higher than the old stack, and must, when completed, become a land mark. Its head will be visible in nearly every direction for twenty miles, and on clear days its black smoke cloud will probably be seen from the vicinity of Topeka, Council Grove, Abilene, and Blue Rapids. It is intended to build two more additions to the power-house this summer, namely, on the east side an office, a locker room and a bath room for the heating engineers and firemen, and on the west side a pipe room with a large store room and work room. These improvements, with the exception of the chimney, were planned by Professor Walters, and all were or will be superintended by him.

GRANARY, SHEDS AND STALLS.

The past College year has also witnessed the building of a roomy stone building for cleaning and storing grain and seeds of all kinds. This building stands east of the "Old Armory" and presents, with its solid walls and high gables, quite an ornamental appearance. It was built, like the south addition to the power-house and the new smoke-stack, by the well-known contractor, Henry Bennett, of Topeka, and has cost about \$5000, not including the earth work and the cementing of floors.

The Animal Husbandry Department has built a neat and large cattle barn in the northeast feed lot, a dozen very fine and substantial horse stalls in the old stone barn, a twelve-apartment chicken-house, with extensive runs, and a large quantity of cattle fences and pens. Improvements of a similar character, though not perhaps as tall and showy, were made by several departments too numerous to mention. The erection of new buildings and the expanding and repairing operations are going on almost all the time without ceasing—the sound of the hammer and the melodious cry for "more mort." are being heard from February till November, year in and year out, yet the College (the needs of the students) grows faster than the State is able or willing to provide for, and we are just now more in need of additional class rooms and laboratories than ever before in the history of the institution.

THE FARMERS' INSTITUTES.

The Kansas State Agricultural College was probably the first institution in the United States to begin the work of holding farmers' institutes. The first public meeting of Kansas farmers for the discussion of agricultural subjects was held in 1868, and since that time the College has assisted in farmers' institutes all over the State. No help was given, however, except upon invitation of the farmers themselves. Consequently many counties have never had any such meetings and many others have held but few institutes.

Last October, however, the Regents decided that the time was at hand when the College should do more aggressive work in this field, organize farmers' institutes in every county in the State and assist in holding meetings, at least annually, in all counties. This new campaign was begun at once. Mr. J. H. Miller, of Holton, Kan., was employed as institute secretary or superintendent, with the understanding that he was to give his whole time to the work. Correspondence was entered into with all institutes in the State that had asked help from the College in the past two years, and also with other counties lying contiguous to these, with the idea

of forming circuits for fall and winter meetings. In most cases the responses were very cordial, and soon several circuits were arranged for. In many cases the first man written to would write back that he did not think the farmers in his county would attend such a meeting. Then a letter would be written to another man, who would write back that the farmers were "anxious to have an institute." It almost always proved the last man right. In one case the secretary wrote to three men in one county and all made the same response: "No interest, not worth while to hold such a meeting." Later he stopped off at that town one evening between trains, saw a few business men and arranged for an institute. A program was made out, the meeting properly advertised, and nearly five hundred farmers attended the institute. This happened in several counties, proving that the farmers are ready for conferences, and also that many business men are now awake to the great advantages of thoroughly organized farmers' institutes.

Since October 25, 1905, one hundred sixteen institutes have been held with one or more College speakers to assist. Organizations were effected wherever none existed before. Institutes have been held in seventy-one counties this year, and it is earnestly desired that organizations be effected in the remaining counties early this autumn.

Properly included in this new form and method of a farmers' institute movement should be the work carried on by the coöperation of the railroads. Last November the Rock Island company furnished a complete train, consisting of baggage-car, two lecture cars and a sleeping- and dining-car while the College furnished the speakers for a series of "Corn and Wheat" lectures. This work covered the entire system of the road in Kansas, and one hundred forty half-hour stops were made. The Missouri Pacific railroad, through its Industrial Department, assisted in holding nearly forty meetings, the company furnishing its handsome exhibit car and its agricultural agent and the College furnishing other speakers.

Institutes have been held in every county on the Central Branch railroad, also on the main line of the Missouri Pacific from Osawatomie to Tribune, on the main line of the "Frisco" from Kansas City to Columbus, on the Santa Fe from Nortonville to Arkansas City and back by way of Howard, Eureka, and Ottawa, in every county but one on the Union Pacific from Lawrence to Sharon Springs, and in many other counties in almost all parts of the State.

The schedule for the fall institutes will be made out in June and July, to begin August 15 in the central and western counties, the Kansas "wheat belt." October 15 the series of meetings in the "corn belt" will begin.

THE EXPERIMENT STATION.

The work of the Experiment Station has for the most part been in the lines of previous years. Space will not permit any summary of it, but a few special points may be mentioned. The coöperative experiments undertaken in connection with the United States Department of Agriculture are increasing in number and extent. The coöperative station at McPherson, devoted to cereal investigations, now uses thirty acres. A seed-house, shed, thresher, gasoline engine, binder and farm implements are included in the equipment. At the Fort Hays Branch Station an extensive series of coöperative experiments has been undertaken designed to ascertain the best rotation of crops for conserving the humus of plains soils, and also the most practical means of conserving soil moisture.

The Station has always been hampered for lack of funds and the passage of the Adams bill was hailed with joy by those interested in agricultural investigation. It was supposed that by its terms \$5000 would be available for the current fiscal year, and amounts in succeeding years increasing by \$2000 per annum until \$15,000 is reached. By the omission of a comma, however, the beginning of the operation of the law is held to take place next year. The additional funds will find several places waiting, any one large enough for it.

The following publications have been issued thus far since June 30, 1905, and five or six more bulletins are nearly ready for the printer:

Eighteenth Annual Report, for the year ending June 30, 1905. This includes an account of coöperative experiments in irrigation as well as the usual financial statements. With the bulletins issued during the period which it covers it makes the largest annual report yet issued by the Station.

- Bulletin 130, Steer-Feeding Experiment, VII, 1903-'04.
- " 131, Care of Dairy Utensils.
- " 132, Western Feeds for Beef-Production.
- " 133, Alfalfa Seed: Its Adulterants, Substitutes and Impurities and their Detection.
- " 134, The Alfalfa Seed-Crop and Seeding Alfalfa.
- " 135, Grading Cream.
- Press Bulletin 143, Preparing Fruits for Exhibition.
- " " 144, The Garden Web-Worm.
- " " 145, A Shade-Tree Pest: The Fall Web-Worm.
- " " 146, Testing Winter Wheat Varieties for Western Kansas.
- " " 147, Kansas Experiment Station Egg-Laying Contest.
- " " 148, A Troublesome Parasite of the Horse.

Press Bulletin 149, Some Swine-Feeding Tests. Armour's Deodorized Meat Meal and Alfalfa as Supplementary Feeds to Corn.

" " 150, The San José Scale in Kansas.

" " 151, Baby Beef Production with Western Feeds.

The Station bulletins are sent free to every Kansas farmer who desires to receive them. The list of readers is constantly growing, which indicates that the work of the Station is being appreciated. The editions of the present year have been printed in 25,000 copies, and this number is hardly sufficient to fill the constantly increasing demand. The press bulletins are issued in limited numbers and sent to certain State and county officers, and to newspapers which desire to publish all or part of their contents. Parties desiring to receive the Station bulletins of the Station should address the director, Prof. J. T. Willard.

NEEDS OF THE COLLEGE.

This is perhaps not the place to go into detail concerning the varied needs of the institution, yet our friends and patrons will excuse us for mentioning a few of our main wants for the purpose of reminding them that we have grown phenomenally during the past half dozen years, and that we expect to grow in the future. The legislature has done better by us lately than it used to do. It feels that the State is in such prosperous condition that it can better afford to contribute to the expenses of the great technical school which Uncle Sam has founded and maintained at Manhattan, but the fact is that this school has not fared as well as many similar institutions of the surrounding states. The legislature should not ask its higher institutions of learning, How much must you have to maintain your existence? but it should inquire, How much can you spend to advantage?

The College needs a new veterinary building, complete with class rooms, laboratories, clinics, offices, exhibition rooms, etc. It needs a new Domestic Science Hall, four times as large as the present building, which was erected a dozen years ago when the number of young women at the College was about one-fourth of the present number, and when there were no courses in domestic science and no short courses. It needs a building for the course in architecture and the extensive work in elementary drawing and graphics. The department occupies rooms at present that are totally unsuitable and inadequate, and has lived in these rooms for twenty-one years. It needs a large gymnasium and drill hall. It needs better quarters for its printing-office. It needs more room for its preparatory students and its classes in English and mathematics. We shall make a deter-

mined effort to get these needed buildings and their proper equipments and shall require the effective assistance of our friends to get them.

THE LIBRARY.

The Agricultural College possesses a library of which any college might be proud. The books are well shelved, well bound and well arranged, and, as may be judged by the following statistics, the students make extensive use of its literary and scientific treasures. The reading-room is large and well lighted. The order and discipline in the building is perfect. Three regular assistants and two student assistants take care of the shelves, cards, and reading-rooms.

Volumes in library.....	32,135
Volumes added this year.....	1,684
Current newspapers filed in reading-room.....	250
Current magazines filed in reading-room.....	100
Volumes bound or rebound in '05-'06 by State bindery.	600
Volumes drawn for home study.....	4,500
Books drawn for consultation in library per day, about	600
Cards added to library catalogue.....	10,000

The annual appropriation for the purchase of additional books last year was \$1800. To some patrons and friends this may seem a large sum, yet by dividing it into over twenty-five different departments it becomes small. The books that the College needs most are not the standard books of English literature and American history, which are usually sold cheap, but they are the most modern and comprehensive works on biology, physics and chemistry, mechanics, domestic science, architecture, etc., many of which are published in foreign languages and all of which are costly for many reasons. The annual appropriation for this purpose should be at least double what it is at present.

STUDENTS.

The total enrolment for the present school year is 1688, the largest attendance in the history of the College. We make this statement with pride, yet it is not a new one. When the writer of this was elected a member of the Faculty thirty years ago the College had but 168 students, and since then every year, with few exceptions, was just such a "greatest attendance year." In 1885-'86, that is, 10 years later, it had grown to 428; in 1895-'96, that is, twenty years later, it was 734; in 1902-'03, that is, five years later, it reached 1396 and in less than five years from date we predict it will have reached the two thousand mark. Kansas is a growing State and the Agricultural College is its favorite child.

The following schedule gives the attendance by classes for this year and the past year:

	1905-'06	1904-'05
Graduates	30	26
Seniors	110	117
Juniors	145	122
Sophomores	214	198
Freshmen	373	289
Preparatory	598	500
Special	46	30
Dairy Short Course	28	24
Domestic Science Short Course	86	88
Farmers' Short Course	118	99
Apprentices	12	
 Total	 1748	1505
Counted twice	60	43
 Total enrolment	 1688	1462

It will be seen by comparing the two columns that the total increase of students for last year is 226 and that there is an increase in every class except two. There is an increase in the freshmen class of 84 and in the preparatory class of 98. These are certainly gratifying figures, especially when we add that 1655 of these young men and young women came from 97 of the 105 Kansas counties and only 32 from other states or countries. Six of the latter were from the Philippine Islands and one from Japan. Four of the graduate students have completed their courses and will receive their master's degrees on Commencement.

THE VETERINARY SCIENCE COURSE.

The Board of Regents last summer added a four-years' course in veterinary science to the corresponding courses in general science, agriculture, domestic science, mechanical engineering, electrical engineering and architecture, and decreed that graduates from this course should receive the degree of Doctor of Veterinary Medicine.

The first two years of this course are nearly identical with that of the course in agriculture, but the junior and senior years are largely given to the study of *materia medica*, animal anatomy and surgery, pathology, obstetrics, meat inspection, etc. Eight juniors and sixteen sophomores joined the course and the outlook for this new line of work is very promising. Doctor Schoenleber is an enthusiastic teacher and a practical scientist who will make a success of the course. The State is very much in need of scientifically trained veterinarians and the legislature should be willing to provide the necessary appropriations next winter for a new building and ample equipments.

POISON LABORATORY.

The legislature, at its session in 1901, made provision for preparing and distributing poison by the College for prairie-dogs and pocket-gophers. During the first three or four years the demand for poison was such that a special expert was employed to prepare and express the mixture. Up to January, 1904, fully 1200 pounds of strychnine and over half a ton of potassium cyanide was consumed in manufacturing the poison, and from 600,000 to 700,000 acres of land formerly infested with prairie-dogs were freed from the pest. Later the demand for the mixture fell off, showing that the efforts had been successful, and the poison laboratory was connected with the Department of Entomology and Zoölogy. Professor E. A. Popenoe, the head of this department, reports that there were sold during the year now ending about 1000 quarts of prairie-dog poison and about 400 quarts of gopher poison, with orders for both continually coming in. He says that the sale of prairie-dog poison is slowly but constantly diminishing, because through the use of our poison the dog towns are now nearly cleared out, but he reports that the demand for gopher poison in small quantities is increasing.

J. D. WALTERS.

The Alumni Memorial.

The following are the contributions received to date for the alumni memorial portrait fund. The numbers correspond with the numbers on the receipt sent by the secretary:

No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
1.....	\$ 5 00	17.....	\$ 1 00	35.....	\$ 3 00	50.....	\$ 3 00
2.....	5 00	18.....	1 00	36.....	5 00	51.....	5 00
3.....	5 00	19.....	1 00	37.....	5 00	52.....	2 50
4.....	5 00	20.....	1 00	38.....	5 00	53.....	5 00
5.....	5 00	23.....	1 00	39.....	1 00	54.....	5 00
6.....	1 00	24.....	5 00	40.....	2 50	55.....	5 00
7.....	2 50	25.....	1 00	41.....	2 50	56.....	5 00
8.....	1 00	26.....	1 00	42.....	5 00	57.....	5 00
9.....	1 00	27.....	10 00	43.....	2 50	58.....	5 00
10.....	1 00	28.....	1 00	44.....	1 00	59.....	1 00
11.....	2 00	29.....	1 00	45.....	5 00	60.....	2 50
12.....	10 00	30.....	5 00	46.....	1 00	61.....	5 00
13.....	2 00	31.....	1 00	47.....	5 00	62.....	15 00
14.....	5 00	32.....	3 00	48.....	5 00	63.....	5 00
15.....	5 00	33.....	1 00	49.....	2 00	64.....	2 00
16.....	5 00	34.....	2 00				

The April number of the Rhodesian *Agricultural Journal*, Cape Town, South Africa, contains two excellent half-tone reproductions of photographs of alfalfa hay making scenes in Kansas. These photographs were furnished the Rhodesian government by the Kansas Experiment Station, Manhattan.

THE INDUSTRIALIST

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PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

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Local Notes.

Coach Melick treated the track team boys to all the cocoanut ice-cream they could eat Monday morning.

Professor Kammeyer delivered the annual address at the Commencement of the M. E. university, of Kansas City, Kan., last Friday.

The Farm Department has begun harvesting. On June 2 the winter barley was cut. Professor Ten Eyck says it will yield sixty bushels to the acre.

The Printing Department has just finished the printing and stapling of Station Bulletin No. 135, on "Grading Cream," prepared by the Dairy Department.

To judge from the great number of inquiries received by the Animal Husbandry Department concerning breeding sheep and sheep literature there must be a general awakening of the sheep industry all over the State.

Professor Willard was called to Durant, I. T., the first of the week to testify before the grand jury, in behalf of the United States Government, in a case of alleged violation of the internal revenue laws touching the manufacture and sale of oleomargarine.

Pres. and Mrs. E. R. Nichols, assisted by Professor and Mrs. McKeever, Professor and Mrs. Hamilton and Professor and Mrs. Kammeyer, gave a reception to the seniors at East Parkgate Friday evening, June 2. About ninety seniors were present. Several new and unique forms of entertainment were given, and refreshments were served.

Dr. Elbrecht, chief of the dairy department of the government of Denmark, visited College last Monday. He was making an official tour of investigation of dairy methods and dairy facilities through America to ascertain the causes of the growing competition in European markets of American products. The Doctor was greatly interested and pleased with everything he saw and pronounced our chances to become a great dairy state as excellent.

The excursion over the Rock Island railroad from northwest Kansas to this College last Thursday was a grand success. Over one thousand persons were here from all parts of the northwest and interested and enjoyed themselves in the fields, the shops and laboratories or admired the beautiful trees and shrubs of the campus. In the afternoon they witnessed the drill and review of the cadets, listened to an outdoor concert of the cadet band and later to a concert by the Music Department in the Auditorium.

Lunches and ice-cream were served under the trees near Kedzie Hall. Every one of the visitors seemed to be pleased and inspired to study for himself the great technical school of Kansas, and we believe that the visit will be of lasting benefit to both parties—the visitors and the visited.

We draw the attention of our visitors during Commencement week to the exhibits of student work in the different departments. The Architecture Department has arranged an exhibit of several hundred drawings in the drafting room, on the second floor of the main building. The different sections of the Mechanical Department have many interesting specimens of student work on exhibition in the shops. The biological departments have some very fine student collections to show, and the Domestic Art Department makes its usual annual exhibition of sewing and dress-making work. Visitors should not neglect to visit the cattle sheds and barns, the horticultural grounds, the mechanical workshops, the museum, the Library and the printing-office. Every room will be open and everybody will be welcome.

Alumni and Former Students.

Leroy Rigg, '01, and wife, Marvin, Kan., were among the excursionists Thursday.

The Graduate Ionian Society is fitting up alumni headquarters in Miss Rice's office in the south end of the main College building, Anderson Hall. Alumni are cordially invited to meet with their friends, register, and make themselves at home. Miss Rice, secretary of the Alumni Association, will be there to sign certificates.

At the home of the bride's parents in Whiting, Kan., on the afternoon of June 2, Miss Nell Paulsen, '05, was united in marriage to Mr. L. B. Pickett, '05. The ring ceremony was used and was performed by Reverend Edwards. Miss Fanny Reynolds, '05, acted as bridesmaid. The room was prettily decorated with pink and white roses. Mr. and Mrs. Pickett left on the evening train for Lincoln, Neb., where, after July 1, they will be at home to their many friends at 129 South 17th street.

A very quiet and pretty home wedding occurred at the home of Mr. C. L. Cole, on State street, at 1 o'clock Sunday afternoon, May 27, 1906, when Miss Elsie E. Crump ['95] of Manhattan, Kan., and Mr. Jas. A. Ames, of this city, were married, the Rev. E. N. Murphy officiating. Only the immediate members of the family were present. Miss Crump was a teacher in the Boulder schools, where she enjoyed the respect and esteem of numerous friends, which was demonstrated by the many beautiful and useful presents bestowed on her at "showers" given in her honor before leaving. Mr. Ames was formerly connected with the wholesale grocery in Boulder, where he met the bride. Since coming to Boise he has become a member of the Palace Market Company, and has shown himself to be a popular and enterprising young

business man. A host of friends extend congratulations. The young couple will be at home at 1620 State street, June 5.—*Idaho (Boise City) Capital, through the Nationalist.*

AMOS-O'DANIEL.

From the detailed account in the *Nationalist*, the following is extracted concerning a very important event in the lives of two popular alumni:

"One of the prettiest and most elaborate weddings of the season was solemnized Wednesday evening, June 6, at 8:30 o'clock, when Miss Anna Louella O'Daniel was united in marriage to Mr. Edgar McCall Amos. The ceremony was read by Rev. A. W. Atkinson, of the First Baptist church, assisted by Rev. S. Alonzo Bright, of the First M. E. church. The color scheme of the decorations was pink and white and the church was decorated in masses of pink and white roses, and banks of ferns, palms, and daisies. An arch of green studded with daisies was placed back of where the bridal couple stood and the pews were decorated with daisies.

"The bridesmaids, Misses Jewel Spohr, Daisy Crans, Gertrude Rhodes, Bertha McCreary, and Clare Cave, are members of the Treble Clef, of which the bride is a member. The groom was attended by Captain Pearl M. Shaffer, of the 25th Infantry, U. S. A. Prior to the ceremony, 'Bid Me to Love,' by D'Auvergne Barnard, was sung by Miss Florence Sweet, and as the bridal party took their place the 'Bridal Chorus,' from Lohengrin, was sung by Misses Florence Sweet, Grace Smith, and Adelle Blachly. Miss Nellie Cave, also a member of the Treble Clef, at the organ and Mr. R. H. Brown, with the violin, played the wedding music.

"A reception at the home followed the ceremony, to which only relatives and immediate friends were invited. The color scheme was the same as at the church; the house was a veritable bower of green with its banks of palms, ferns and all archways festooned with ropes of asparagus with field daisies and roses peeping out at every conceivable place. After congratulations to the bride and groom the guests sat down to a four-course luncheon, prepared and served in a highly creditable manner by the College girls. From the chandelier over the bride's table was suspended a white bell, and ropes of smilax extended to the four corners of the table; the center piece being an elaborate floral piece of roses and smilax. The courses were interspersed by humorous and appropriate toasts by the Treble Clef members.

"Mr. and Mrs. Amos left on the midnight train for a short trip, and will be at home after July 6, at 1000 Leavenworth street. The bride graduated at the K. S. A. C. in 1903, and is worthy in every way of the high regard in which she is held by a large circle of relatives and friends. The groom graduated from K. S. A. C. in 1902, and has since been engaged in the printing and publishing business. Mr. and Mrs. Amos are well known here and have a host of friends that wish them well, with the hope that the future holds in store all that could be desired by this happy couple."

Hays Branch Experiment Station Notes.

Several students of the Kansas State Agricultural College will work at the Hays Experiment Station during the summer vacation.

The alfalfa sowed at the Hays Experiment Station April 25 is coming up nicely, though the weeds will need to be mowed off several times this year.

The cultivators are kept busy in the corn-fields at the Hays Experiment Station. Four new machines, of different pattern, are secured this year for trial. Most of the corn is doing fine, and aside from the cultural experiments, thirty varieties are being tested and an "ear to row" trial is being made.

Oats, barley and winter wheat are all heading out short at the Hays Experiment Station. Emmer and spring wheat have not yet headed. Flax is in bloom and *Bromus inermis* is heading. Three plats of broom-corn in a "Time of Seeding" experiment have been planted, while the trial of variety seeding will soon be planted.

The potatoes at the Hays Experiment Station show a fine stand. Spraying is now being done, Bordeaux mixture being used. This is made of two and one-half pounds of lime, three of copper sulphate, and one-half pound Paris green dissolved in twenty-five gallons of water. It is both a poison for the Colorado potato beetle and a check to blight that may be attacking the plants. Irrigation experiments and seed-bed preparation tests are in progress with both home-grown and northern-grown seed. Total area planted is twelve acres.

The sugar beets planted at the Hays Experiment Station are a good stand and about large enough for thinning. This operation requires considerable work, the labor costing about \$6 per acre. Subsoiling *vs.* ten-inch plowing *vs.* five-inch plowing and irrigation tests are in progress with this crop. One two-acre plat was seeded with Original Kleinwanzelbener, imported seed from Europe, and another two-acre plat was planted with the same variety, but seed produced in the United States, near Washington, D. C.

The first crop of alfalfa hay at the Hays Experiment Station is being harvested, and nearly all the fields are making a good yield. The irrigated plats have not yet been hauled in, though it is evident that irrigation has increased the yield considerably. As it is the intention to feed a part of the first cutting to work horses, along with prairie hay and grain, the alfalfa is put into the barn loose instead of being baled in the field, as was done last year. After the alfalfa is well wilted in the swath, it is raked in the windrow with a side-delivery rake to cure. When well cured, it is loaded on the wagon from the windrow with a Deere hay loader, and upon arrival at the barn the hay is elevated to the lofts with rope slings, four sling loads only being required to unload a large wagon load.

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The Commencement.

The forty-third Commencement of the Kansas State Agricultural College was a successful one in every respect. The weather was sunny, cool, and delightful, every part of the program was well carried out, and the attendance of friends and patrons of the institution was larger than at any time in the history of the College. It is estimated that over six thousand people were on the campus in the afternoon of Thursday, the closing day.

BACCALAUREATE SERMON.

The Baccalaureate sermon was given in the College Auditorium at 4 P. M., on Sunday, June 10, by Rev. Daniel McGurk, pastor of the Grand Avenue M. E. church, Kansas City, Mo. After a beautiful introductory by the orchestra and an anthem sung by the audience, Dr. Bright, of the M. E. church of Manhattan, led in prayer. President Nichols then introduced the speaker, whose subject was "Religion and Life." The Reverend is one of the best-known pulpit and platform orators of the West. He handled his subject in a clear and forcible way and made his points in a masterful manner, showing that real religion can not be bought, inherited, confessed, or performed, but that it must be lived; that it must enter into everything man does and thinks; that it must be the directing influence, the compass of man's life; that it must form an integral part of every College graduate's mentality.

RECITAL BY THE MUSIC DEPARTMENT.

On Monday night the Music Department gave its Commencement recital in the College Auditorium to a full house. The department has for the last two years given similar recitals at intervals of two or three months and has awakened much interest among the students, the Faculty, and the lovers of the art in and about Manhattan. The program rendered last Monday was an especially fine one and was well received by the audience. The interest of all parties was greatly increased by the use of the new scenery which President Nichols had procured and set in place on the platform the past week. Prof. Olof Valley, who directed the

vocal music, and his assistants, Robert H. Brown and Cecilia Augspurger, who directed the orchestra and piano music, respectively, are to be congratulated on their success in making the Second Annual Recital a success that will secure it a permanent place in future commencements. The following is the program rendered:

1. "The Crusader"..... DeKoven
ORCHESTRA.
2. Vocal..... "A Song of Joy"..... Brambach
ESTA HUNGERFORD, HALLIE SMITH, LAURA LYMAN.
3. Piano..... "Valse in A flat"..... Moszkowski
AUGUSTA AMOS.
4. Vocal..... "Torreador Song" [Carmen]..... Biset
CHAS. SHERMAN.
5. Piano..... "Whispering Wind Caprice"..... Wollenhaupt
EDNA JONES.
6. "Over the Field at Early Morn"..... Giebel
GLEE CLUB.
7. Horns..... "Duet Il Trovatore"..... Verdi
A. J. COWLES, H. E. BIXBY.
8. Piano..... March und Chor aus Tannhauser..... Wagner, Burchardt
ELSIE BROWN, TILLIE KAMMEYER, IRENE INGRAHAM,
ESTER CHRISTENSEN.
9. Vocal, (a) "The Willow"..... Goring Thomas
(b) "When Mabel Sings"..... Speaks
GERTRUDE EAKIN.
10. Violin..... "Fantaise" [Faust]..... Alard
M. OTEYZA.
11. Piano..... "Spinnlied, Op. 81"..... Litolf
BESSIE NICOLET.
12. Vocal..... "Now Thou Art Mine Forever"..... Hildach
GERTRUDE EAKIN, CHAS. SHERMAN.
13. Piano, (a) "Serenade"..... Strelezki
(b) "Valse C Sharp Min"..... Chopin
EUGENIA FAIRMAN.
14. (a) "Peasants' Wedding March"..... Soderman
(b) "He That Hath a Pleasant Face"..... Hatton
CHORAL UNION.

FINAL EXAMINATIONS.

Tuesday and Wednesday were given to regular class examinations. Visitors had come in from all parts of the State, but the average patron is not eager to enter a "College Sweat Shop," on a warm June day and watch the students as they read the hieroglyphics on the blackboard and try to discover cobwebs in the upper regions of the temple of learning. Professional educators often do this, but the visitor from abroad looks up the workshops, the

creamery, the cattle pens, the library and the museum. Many, too, gathered in the rooms of the Architectural Department where Professor Walters and his assistants had made a large exhibit of student drawings. Over 1200 neatly executed drawings, colored designs, blue-prints of architectural compositions, pen sketches of historic ornaments and facades, etc., were on exhibition there, and the two large drawing rooms on the second floor of the main building were thronged with visitors the whole week. The dairy barn and the creamery were other places of interest to be visited, and many of the farmers who had read of the new milking machine lately installed by the Animal Husbandry Department wanted to see that machine to ascertain whether it looked like a town pump or a grind-stone. The Department of Domestic Art had arranged a fine exhibit of dresses and dress articles made by students and drew many favorable comments from visiting women, old and young.

THE CLASS PLAY.

On Tuesday evening about twenty-five members of the class of 1906 presented their three-act comedy, "The Gypsy Queen," to an appreciative audience. Each part was well played, showing much care in the selection of the personnel, and diligent practice by those selected. Miss Lincoln, of Topeka, who had charge of the practice, deserves mention for her good work. The new scenery, which allows three complete changes, was well adapted to the play and gave a depth to the stage. The settings were well arranged and all parts well worked out. The play is not an easy one and we agree with the *Students' Herald* when it says: "It is a little apt to tax the imagination and throw the performance into exaggerated circumstances. Several points are difficult to catch, while one or two essential points do not seem to readily follow from the preceding part." These criticisms, however, affect the writer and not the players. The drama is well interspersed with music in the way of choruses and solos which were well rendered. The cast of characters was as follows:

Irene Dare, "The Gypsy Queen," a woman with a history.....	Edith Worden
Richard Harding, a man with a history.....	Earl J. Evans
Dora Sharp, a heartless coquette.....	Verda Murphy
George Holt, so awfully nervous.....	L. M. Graham
Frank Savage, a jealous lover.....	George Spohr
Joseph Dare, Irene's adopted son.....	E. A. Wright
Inez, Harding's reputed daughter.....	Doris Train
Alolphus Swipem, a cowboy evangelist	W. B. Thurston

Chorus of Gypsies.

Picnickers.

THE ALUMNI.

The number of graduates visiting the College this Commencement was quite large, notwithstanding that it is an off year. The attendance at the business meeting was good though not large, but the gymnasium was well filled at the reunion held Wednesday evening. The total number of those who registered was 141, and 16 others were known to be present Commencement Day. Those from out of town were as follows: Emma (Haines) Bowen, '67; S. W. Williston, '72; Louis Humphrey, '77; H. C. Rushmore, '79; J. W. Berry and Mary (Bower) Ady, '83; A. L. Noyes, '85; H. W. Avery and Hattie Noyes, '91; Martha Cottrell, Lorena (Helder) Morse, and J. F. Odle, '94; Victor Emrick, T. W. Morse, and Ora Yenawine, '95; May (Bowen) Schoonover, G. W. Finley, Marian Jones, T. L. Jones, C. E. Pincomb and I. A. Robertson, '96; W. O. Peterson and Phoebe J. Smith, '97; Minnie Copeland and Elsie Waters, '98; J. C. Bolton, J. O. Tulloss, and F. O. Woestemeyer, '99; Elizabeth J. Agnew, E. M. Cook, and Barton Thompson, '00; Delmar Akin, Minnie Howell, Madge (McKeen) Axelton, Estella M. Tharp, and Eleanor White, '01; Mamie (Alexander) Boyd, Glick Fockele, E. W. House, and E. R. Secrest, '02; Edith Goodwin, Clara Pancake, and Alice (Perry) Hill, '03; J. G. Arbuthnot, V. L. Cory, Hattie Forsyth, A. H. Helder, John T. Skinner, Henry Thomas, and Carl Thompson, '04; A. N. H. Beeman, A. D. Colliver, F. L. Courter, W. K. Evans, O. A. Hanson, H. P. Hess, Richard Meyer, L. J. Munger, W. W. Stanfield, A. F. Turner, Fred VanDorp, and George Wolf, '05.

At the business meeting the report of the treasurer showed about a dollar in the treasury and bills unpaid amounting to over \$30.00. Much of this was caused by the canvass of the association in respect to the *Jayhawker*, an undertaking carried out in the interests of the non-resident alumni. The committee on *Jayhawker* reported without recommendation that all together the opinions of 213 alumni has been received, of which 11 were opposed to, or doubtful concerning, the proposition to acquire the paper and conduct it. Of the 202 more or less favorable to the project, 58 made no suggestion concerning the method of financing it, 79 thought that subscriptions and advertising should pay for it, and the 65 others mentioned other methods. Many suggested assessment of members, overlooking the fact that assessments cannot be enforced. The formation of a company was favored by several who had some grasp of the real difficulties of the situation. After considerable discussion, it being evident that the association could not assume the magazine with certainty of

successful management, it was voted to encourage the present owners by making it the official journal, and the officers of the association were instructed to advise all alumni to subscribe. It is understood that the magazine will be continued next year under its present management, and that the price will be \$1.00 per annum.

The committee on memorial paintings of the deceased ex-presidents of the College reported that only \$270.00 had thus far been paid or subscribed. It was also reported that space in Fairchild Hall has been set aside by the Board of Regents for the use of the alumni in placing memorial portraits. The committee was continued.

The following officers were elected: President, G. C. Wheeler; vice-president, H. C. Rushmore; treasurer, Margaret Minis; secretary, Alice M. Melton.

In the evening there was an informal reception to alumni, in the Women's Gymnasium. A large number of alumni were present and spent the short hours in handshaking, singing of College songs, relating of "truth and fiction," and partaking of refreshments. As this was not one of the triennial meetings agreed upon by the alumni as a time of gathering of the tribe of the sons and daughters of the glorious K. S. A. C., no banquet with set program was indulged in, but all who were present enjoyed the occasion and the initiation of a new class of nearly one hundred members.

THE COMMENCEMENT.

Thursday morning the campus was thronged at an early hour with multitudes of visitors, though the program did not begin till 10 o'clock. Thousands had come by railroad or wagon or on foot to spend a day picnicking under the trees of the beautiful campus of the great technical school of Kansas, to listen to the educational addresses and the high-grade musical programs that were to be given, and to witness the military review and sham battle by the College cadets. It is estimated that over 6000 persons were actually present when the last number of the program was rendered. Commencement day of the Kansas State Agricultural College means a holiday for every one who lives within a dozen miles from Manhattan and who can possibly spare the time.

The exercises began with a well-rendered selection, Shumann's "Träumerei," by the College Orchestra under the direction of Asst. Prof. R. H. Brown. Reverend Atkinson, of Manhattan, led in prayer. Pres. E. R. Nichols then introduced the orator of the day, Prof. Edwin Erle Sparks, Ph. D., Dean of University College of the University of Chicago, who addressed the class

and the audience on "Making An American." The address was a masterly one. It held the audience spell-bound for an hour, brought forth frequent applause, and awakened intense interest in the timely subject. Mr. Sparks said in part:

"During the past school year, more pupils were in schools in the United States than the entire population numbered in 1840, and more money was spent on education than the national debt amounted to in any year preceding the Civil War. 'Taxation without representation is tyranny,' said one of the Fathers of the American Revolution; yet thousands of citizens unrepresented in the schools freely consented to be taxed for their support. What has the public a right to expect in return? Is it enough to fill the vacant places with trained workers, to supply professional men, skilled engineers, useful housewives, and educated business men? Has the State a right to expect a higher standard of citizenship from the money spent on education?

"We shall differ concerning the definition of 'patriotism'; let me, therefore, enumerate some essentials in the making of a good American. In the first place, I would have the boys and girls who come from our schools know how to serve. Undue haste is the evil genius of American workmanship, whether in the field of crafts, or in the field of scholarship. Trace back the cause of many railway accidents, the occasion of many fires in buildings, the reason why so many structures collapse, and you will frequently find the work was in charge of foremen or done by workmen who had not served their proper apprenticeships. Greeley served seven years as a printer's apprentice. Young men of this day seem unwilling to serve an apprenticeship, neither are they willing to serve their superiors or to serve the state.

"In the second place, I would have the boys and girls willing to toil. Our forefathers who carved an empire out of a wilderness knew how to toil. Take proper care of the body and the mind rarely breaks down through over-study. Where one boy has been wrecked physically from over-work in school, a thousand have failed from over-cigarette, over-late hours, and lack of exercise. Where one nervous girl has broken down from over-study, scores have fallen by the way from over-society. Whatever danger we may be in from accumulated wealth, and resulting enervation must be countered by toil. That has thus far proved the salvation of the American character. We never had temptation, such as have now brought shame to our national pride, when we had to work hard for a living.

"My third ingredient for making an American is to know how

to be useful. An education or attempting to get one, I speak boldly, has ruined many a boy or girl. My only qualification is whether he or she would have been worthy anything in any event. But the education which teaches a boy or girl to be an ornament in life is far from a blessing. If education makes one afraid to soil his hands with honest labor, it is a misfortune.

"Another qualification necessary in making a true American is to know how to obey. This is the hardest lesson in life and especially so in America from the nature of our government. We say in the Old World, man is born into a state of obedience and in the New into a state of liberty. Yet we often mistake liberty for license. No man in even the most liberal government of the world can be a law unto himself. 'Every man has a right to do as he pleases' is a false and dangerous maxim. We are now in the midst of the greatest revival of civic conscience the United States has seen, certainly since about 1825. And the entire basis of the present contention is to make ourselves obey our own laws. A prosecuting attorney gains national fame and gratitude, for doing what? Enforcing the law. Nothing more.

"One more element I must put in this recipe—perhaps it should have come first—to know how to be honest. Not alone honest in dollars and cents, but honest in principles. To be honest with oneself is much harder than to be honest with one's neighbor. An educated man is not necessarily an honest man. Indeed, the most highly educated men are the most dangerous when dishonest. We can take care of the common thief and petty criminal. We have jails and policemen and all the machinery for repressing him. But what puzzles us most is to catch the educated thief, the polite boodler, the cunning graftsman, the corrupt legislator, the evading capitalist. How to get the man who insists that he or his corporation is an exception to the law is the difficulty. And the mischief is that he is able to influence the making, the executing and the judging of the law. If we breed an overpowering force of socialists, who become anarchists, the educated law-breaker is largely to blame.

"In conclusion, I ask in what study of the schools is the pupil to secure the qualities I have named—in arithmetic, grammar, history? In no one of these, because the qualities pertain to character and the studies beget knowledge. The two are as distinct as religion and spirituality. Character can never be formed from a text-book. Occasionally we put into the curriculum ethics in hopes of teaching morality as we emphasize American history or civics, expecting good citizenship to result. We shall always

be disappointed. Character cannot be formed except through the personality of the teacher. The teacher must impart his soul, his spirit, his very essence to the student by contact in the school-room. Nor can it be done there without the coöperation of the home. During the school age, the pupil is in school only one hour to every fifteen he spends out of the school. The home, the school and the community must share alike this great task of making an American."

After an anthem by the Choral Union, under the direction of Prof. Olof Valley, Pres. E. R. Nichols briefly addressed the graduates. He said he agreed with every sentiment the orator of the day had uttered, and felt like emphasizing the sentence, "Go and rule by obeying nature's laws." "The graduating class of 96 students," he said, "had cost the State and nation \$40,000, and had cost the parents and others much more, not to speak of the individual effort and time contributed by the graduates themselves. The College, the State and the Nation had a right to expect rich returns in high-grade citizenship, correct life, and effective work." He then proceeded to confer the degree of Bachelor of Science on the members of the class, who marched up to his desk in single file and accepted the "sheepskin."

The degree of Master of Science was conferred on four postgraduates who had completed a two-years' course of advanced scientific work under the direction of the Faculty.

The following is a list of the graduates and postgraduates of 1906, together with the title of the original thesis written by each:

Kate Alexander, The Fall of Rome.	John Willard Calvin, A New Method of Determining Iron. Nitrites, etc.
Albert Clay Aumann, Plans for Barn-yards.	Stella Campbell, Record of Experiments of Catering and Standard Dietaries.
Jesse N. Bealey, Farm Crops as Related to Improved Stock-raising.	Will Ward Campbell, The Beef Trust.
Raymond Russell Birch, The Sheep Industry in Kansas.	Torje Carlson, Efficiency and Regulation of Gasoline Electric Generators.
Herbert Jefferson Bottomly, The Bacon Hog.	James Hamilton Cheney, Corn Planting.
F. Edna Brenner, Race Elements in the Formation of the English Language, and the Influence of these Elements upon English Literature.	Edith E. Coffman, Experiments in Fireless Cookery.
Byron Broom, A Practical Manual Training Course: The Selection and Arrangement of Exercises in Wood, Forge, and Foundry Work.	William Irving Coldwell, The Single Phase Railway.
Frank E. Brown, Kellogg System of Switch Board Con- nections.	Archie Conner, The Horse Industry in Kansas.
	Jessie Leona (Travis) Cook, A Study of Primitive Religion.

- Perry Alfred Cooley,
The Botanical Effect of Pasturing upon
the Native Grasses.
- Ruth Cooley,
Dietary Studies—A Family of Six.
- Mary Copley,
A Study of the Elective Franchise of the
United States.
- Winifred Anna Dalton,
A Chemical Examination of Certain Bak-
ing Powders.
- Charles Ernest Davis,
The Design and Construction of a Mag-
netic Separator.
- Jay L. Dow,
Efficiency and Regulation of Gasoline
Electric Generators.
- Odessa Della Dow,
Experiments in Fireless Cookery.
- Arthie Aileen Edworthy,
A Study in the Nutritive Value of
Special Diets.
- Leonard Roscoe Elder,
The Use of the Rotary Converter in Sub-
stations.
- Harriet Marie Esdon,
Boundary Lines in United States.
- Earl Joy Evans,
Design for a City Hall.
- Smith Faris,
The Design and Construction of a Record-
ing Traction Dynamometer.
- Arba C. Ferris,
Plans and Specifications for a 500 Drop
Telephone Exchange.
- M. Edith Forsyth,
The Economic Value of Electricity in
the Kitchen.
- Charles A. Gilkison,
Aberdeen Angus Cattle.
- William Thomas Gilliford,
Life and Efficiency Test of the Tantalum
Lamp.
- Lewis M. Graham,
The Use of the Rotary Converter in Sub-
stations.
- Rennie Greene,
Growing Conifers from the Seed.
- Elbert Ernest Greenough,
Intensive Farming.
- David H. Gripton,
Catch Crops for Forage and Green
Manure.
- Roswell Leroy Hamaker,
Comparative Tests on Building Stone
from College Quarries and on Concrete
Building Blocks.
- Mary L. Hamilton,
The Economic Value of Electricity in
the Kitchen.
- Boline Hanson,
Advantages of Co-education.
- Daisye Ina Harner,
Methods Best Adapted to the Teaching
of Domestic Science in High Schools.
- Raymond D. Harrison,
Farm Barns.
- Milo M. Hastings,
Raw Grains as Human Food.
- Clarence L. Hawkinson,
Government of American Colonies.
- Leslie Eugene Hazen,
Rural Architecture and Landscape Gar-
dening.
- Harry Russell Heim,
Rewinding and Testing a Twenty Horse-
power D. C. Motor.
- Gertrude Elma Hole,
The Phosphorus as Protein, Lecithin, and
Inorganic Compounds in the Yolk of an
Egg.
- Nellie Dorothy Hughes,
Inquiry into the Mental Nature of
Children.
- Helen C. Inskeep,
Bread Making.
- Charles Sumner Jones,
Cottonseed-meal as a Stock Food.
- Fredric Arthur Kiene,
The Future of the Beef Industry in
America.
- Clarence Brady Kirk,
Physiological Aspect of Education.
- Laura Lillian Lyman,
Systematic Physical Training in Schools.
- Charles Wilber McCampbell,
Interest as an Agency in Mental Devel-
opment.
- Cora E. McNutt,
Record of Experiments of Catering and
Standard Dietaries.
- Alma McRae,
A Summer's Dietary Studies for a Family
of Four.
- Ernest Wilson Matherly,
Three Jews of English Literature: Mar-
lowe's Barabas, Shakespeare's Shylock,
and Scott's Isaac.
- Henry Greenleaf Maxwell,
The Dairy Cow as a Source of Wealth in
America.
- Caroline Morton,
Domestic Economy in Public Institutions.

- Verda Ellen Murphy,
The Peculiar Nature of Habit.
- Ruth Emma Neiman,
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- Oscar Hugo Halstead, B. S., 1895,
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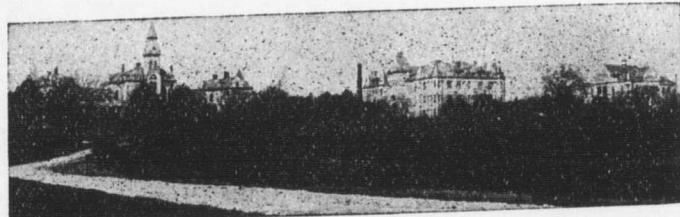
DRILL AND BAND CONCERT.

In the afternoon the Military Department gave a public review on the campus, preceded by a concert by Prof. R. H. Brown's military band, 37 strong, which rendered one of the finest musical programs ever given on a similar occasion. After the review there was a sham battle on the hill south of the Auditorium. The drill and the battle were witnessed by thousands of spectators who cheered lustily when, after a half-hour of heavy firing, the attacking party stormed the position of the defenders and captured the battery that had spit fire into the ranks of the enemy and had awakened the echo far away on Mount Prospect.

The drill by the battalion was an exhibition of tactic perfection rarely seen. It drew comments from all present, and especially from the old war veterans, many of whom had been in active service for years. Capt. P. M. Shaffer, 25th U. S. Infantry, who has been with the College at the head of the Military Department for three years, and who has this summer been ordered back to his regiment, certainly deserves great credit for his effective instruction. He is not only a model soldier and officer, but a model educator as well, and we regret to see him leave the College.

Meetings at the College Next January.

Arrangements have been made for the holding here at the College next January the following meetings: Boys' Corn Contest, Corn Breeders' Association, Kansas Good Roads Association, State Dairy Association, and the Poland-China Breeders', Berkshire Breeders', Draft Horse Breeders', and Aberdeen-Angus Breeders' Associations.



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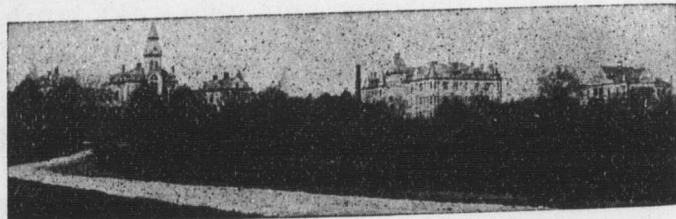
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THE INDUSTRIALIST

*Published weekly during the College year by the
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Manhattan, Kansas.

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Local Notes.

Work on the new Horticultural Hall and the large smoke-stack is progressing rapidly.

The oiled road in front of the College is receiving another coat of crude petroleum this week.

Prof. C. M. Brink left Sunday for Rochester, N. Y., where his son, Laurence, graduates June 20.

Bessie Hudson, sophomore in 1903, is matron of the Orphans' Home of the I. O. O. F. at Eureka Lake.

Professor Walters is working on plans and specifications for a new Baptist church at Smith Center, Kan.

Professor McFarland and wife left Saturday for Olathe, where they will spend the summer on their farm.

A good rain visited this section of the State Sunday evening, breaking a dry spell which threatened to be disastrous.

Supt. Antonetta Becker, of the Domestic Art Department, will spend her summer vacation at her old home in Woodstown, New Jersey.

The Printing Department is working on Bulletin No. 136, which will contain all Press Bulletins issued during the year, being Nos. 125 to 151, inclusive.

Reverend Hull is remodeling his residence on "Faculty Row," and when all the work is completed the house will be occupied by Professor and Mrs. Valley.

The Mechanical Department has placed a metal flag-pole on the south wing of the main building. It is forty-five feet high and is made of 5-inch steel tubing.

The College herd records for this spring a natural increase of 4 colts, 10 calves, nearly 250 pigs and about 30 lambs. All the herds are in good condition. Young stock of all breeds is offered for sale.

The Regents at their Commencement meeting appropriated \$500 for additional equipment in the printing-office. The print-shop is much in need of more body type—a new dress, as the printer calls it.

Miss Minis and her corps of assistants are packing several chests of library books and magazines for shipment to the State printer for binding. In all over 600 volumes will be bound. A bindery should be added to our Printing Department, and the work done here.

Contractor Stingley had a small sized strike on hand in his stone-yard last week. The cutters refused to work without shed roofs. Several of the men left the job.

President Nichols and Professor Willard were at Lincoln, Neb., Thursday and Friday of this week attending a meeting of the agriculturists of the semiarid region.

Florence Ritchie, '05, visited in Manhattan and at the College this week. She was on her way to her home in Kansas City, having resigned her position as teacher of domestic science in the Girls' Industrial School at Beloit.

The domestic science summer school has commenced work with twenty pupils, mostly teachers who intend to prepare themselves for teaching this branch in high schools and colleges. Professor Calvin speaks in high terms of the class and its progress.

Miss Ula Dow, '05, has been elected a regular assistant in the Domestic Science Department. Her work will begin July 1. Miss Dow spent last year at the Massachusetts State Normal School, where she made a special study of domestic science work.

The annual ball game between the Faculty and the senior class was pulled off Monday afternoon at the athletic park before an enthusiastic audience. The final score was 4 to 3 in favor of the Faculty. It was lots of fun, though—a regular "Comedy of Errors."

The Rooters' Club presented Bea Cave, who this spring had made the highest batting average of any member of the baseball team, with the Anderson trophy. His average was .356. Hayes, who played in only two games, was second with an average of .333, and Coldwell third with .285. The average of the team was .267.

The per cent on College games for our team last term was .895. They made 46 errors to 93 of their opponents, scored 126 runs to 57 of the other fellows. They were pall bearers at 7 shut-out games. This is the most successful team that K. S. A. C. has ever turned out. Much of the credit is due to the coaching of Ahearn and to the support of the students. At the closing game "Ikey" Miller, catcher, was elected captain for next year by a unanimous vote.

Prof. O. Erf went to Hutchinson, June 10, to meet with the executive committee of the fair to make arrangements for installing a dairy exhibit for the week of the fair. It will be located in Agricultural Hall and an annex will be built in which to stall the cows. The cows will be milked by a vacuum machine. This machine, now in use at the College, will milk any cow. The butter room will be equipped with shafting and belts to run the machinery. The milk will be pasteurized and turned into separators which will extract the cream. The Babcock tester will indicate the percentage of butter fat. The cream will then be churned and worked by machinery and made into rolls suitable for market. The exhibit will be similar but more extensive than the one at the State fair at Topeka last September.

Press Notices.

The Kafir-corn is nearly all planted at the Hays Experiment Station. The Station will have in 163 acres of this crop this season. This acreage includes rotation, seed-bed preparation trials, and variety tests. A part of this is listed, though most of it was planted with an ordinary corn planter, using Kafir-corn plates, with two disks from a Superior drill so arranged in front of each planter runner as to open a furrow four inches deep and sufficiently wide for the planter wheel to run in. This is quite an advantage, because the seed gets down to moisture, the row is cleared of any small weeds that may have germinated since the land was plowed, the seed being planted in the furrow, the weeds are more easily eradicated by cultivation, and the roots are down deeper, thus the stalk stands the winds better.

The Dairy Department of the Kansas State Agricultural College has issued a bulletin on the grading of cream. The department inaugurated a system of cream grading about two years ago which has given excellent satisfaction to the patrons and made a marked improvement in the quality of cream received at the College creamery. The practicability of the scheme, and its fairness to both the producer and the consumer, have led to the adoption of similar plans by most of the creamery companies of the West. The cream is divided into three grades. To be first grade, cream must be pure and sweet, containing not more than two-tenths of one per cent of acid, having no undesirable flavors or odors, not over three days old, and containing not less than 30 per cent of butter fat. Second-grade cream may be slightly sour, containing not more than three-tenths of one per cent of acid, not tainted, not older than five days, and containing at least 30 per cent of butter fat. Third-grade cream may be somewhat stale, somewhat tainted, and may contain less than 30 per cent of butter fat. A difference of four cents per pound is made between the price of butter fat in first grade and that in second-grade cream, and a difference of two cents between that of second-grade and third-grade cream.

Farmers' Institute Report.

The Kansas State Agricultural College will soon issue a number of the **INDUSTRIALIST** wholly devoted to the Farmers' Institute work. It will contain a report of all meetings last year, 152 in number, a directory of all institute officers, report of the boys' corn contests, and also the partial schedule of institutes for next year and recommendations and suggestions for institute work. This will not be sent to the regular **INDUSTRIALIST** readers except upon request. Copies will be sent free to all persons who send in a postal-card or letter request. Those who write may also add names of others interested in farmers' institutes. Copies will be sent to all members of farmers' institutes if the secretaries will send the names. Address, Superintendent Farmers' Institutes, Manhattan, Kan.

THE INDUSTRIALIST

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Kansas State Agricultural Historical Society

Manhattan



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M. Sheldon Brandt, Ph. B. (Yale).....	Assistant in Architecture and Drawing
Howard R. Watkins, M. S. (Iowa State College).....	Assistant in Chemistry
Heman A. Wood, B. S. (Olivet).....	Assistant in Chemistry
Chas. Yost.....	Assistant in Heat and Power Department
Earle B. Milliard.....	Foreman of Blacksmithing
J. T. Parker.....	Assistant in Woodwork
Miss Ula M. Dow, B. S. (K. S. A. C.).....	Assistant in Domestic Science
Wm. H. Andrews, B. S. (K. U.).....	Assistant in Mathematics
Miss McCotter, B. S. (Ann Arbor).....	Assistant in Mathematics
Miss Edetha M. Washburn, A. B. (K. U.).....	Assistant in English
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.....	Assistant in Animal Husbandry
.....	Assistant in Veterinary Science
.....	Assistant in Dairy Husbandry
.....	Assistant in Chemistry
.....	Assistant in Agronomy
.....	Assistant in Mechanical Engineering
.....	Assistant in Preparatory Department
Miss Alice M. Melton, B. S. (K. S. A. C.).....	Assistant in Heat and Power Department
Walter H. Closson.....	Clerk in Director's Office
William R. Lewis.....	Secretary to President
.....	Janitor

THE INDUSTRIALIST.

VOL. 32.

MANHATTAN, KAN., JULY 28, 1906.

No. 39

A Criticism of the Present Methods of Wheat Grading.

The amendment to the agricultural appropriation bill recently passed by the Senate and now pending in conference between the houses, which provides for the federal inspection of wheat intended for export, should be of considerable interest to the farmer and wheat growers of Kansas and the West generally. The matter of interest does not center so much around the passage of this law itself as around the discussion of it and the facts brought out during its consideration by certain senators who sought to have its operation extended to grain designed for home consumption as well as to export wheat.

Dr. B. T. Galloway, chief of the Bureau of Plant Industry, in a communication to the senate, claims that the present methods of inspection and grading of wheat are far from satisfactory. He therefore asks for an appropriation of \$15,000 to enable the Secretary of Agriculture to establish laboratories in several of the most important wheat centers for the purpose of carefully studying this matter and for devising methods which are sufficiently accurate to serve as a fixed basis for an official grading.

It is claimed that under the present system the wheat when bought from the farmers is graded too low. That, however, which is intended for export is re-graded and the grade placed too high.

"The senators from North Dakota alleged that the inspection provided at Minneapolis cost their state between three and five million dollars a year." (Kansas City Star, May 27.)

In view of the above, it may be of interest to call attention to some investigations made by the writer upon this subject during the past winter.

The grain which is shipped from the central and eastern part of this State is mostly what is known as red wheat and is soft or semi-hard, while that coming from the western wheat belt of the State is hard. Therefore, more clearly to understand the discussion which follows, the rules adopted by the Kansas City Board of Trade for the grading of these wheats are given below.

No. 1 Red. To be bright, sound, plump, dry and well-cleaned red wheat, weighing not less than 61 pounds to the measured bushel.

No. 2 Red. To be sound, well-cleaned, dry red winter wheat, weighing not less than 59 pounds to the measured bushel.

No. 3 Red. To be sound, reasonably cleaned red winter wheat, below No. 2 Red, weighing not less than 56 pounds to the measured bushel.

No. 1 Hard. To be sound, dry and clean hard winter wheat and to weigh not less than 61 pounds to the bushel.

No. 2 Hard. To be sound, dry and clean hard winter wheat, and to weigh not less than 59 pounds to the bushel.

No. 3 Hard. To be sound and reasonably clean hard winter wheat and to weigh not less than 56 pounds to the bushel.

No. 1 wheat of either sort so rarely comes on the market that it may be left entirely out of our further consideration. The prices quoted in the market are therefore always for No. 2 Red or Hard, as the case may be. While the above rules are based on the weight of a measured bushel, wheat on the market is not measured, but the number of bushels is determined by weight; 60 pounds being considered a bushel, no matter what the actual weight per bushel of the sample may be. Now, since the market quotation is for a wheat coming fully up to the requirements for that grade, a deduction of one cent per bushel is made for every pound per bushel less than that required in the standard.

Any variation in the testing would therefore very materially effect the value. For instance, a variation of 1 pound per bushel would amount to a difference of \$10 on a car of 1000 bushels.

Now the question is, does such a variation in testing occur, and is the fault to be found with the inspector or with the methods of testing which he uses? Let us first look at his testing appliances. These consist of the sampler and the tester. The sampler is a double brass tube about 5 feet long. Both inner and outer tubes have a longitudinal series of openings which may be turned so as to open the tube along one side and expose its contents to view. It is closed by turning the inner tube until the openings do not coincide. This tester is closed and pushed down into the wheat. By turning the inner tube it is filled. The grain entering the several openings at their respective heights will thus make a column of grain in the sampler, representing the wheat at all points from the surface to the floor of the car. It is then closed and pulled out. Taking this to the light, the inspector opens the tube and observes whether the grain is of the same quality and in the same condition

at the top and bottom of the car. This grain is then poured out into a little pile and another sample taken from a different part of the car and emptied on the same spot. In this way, five or six samples are taken, and there results a pile of wheat made up of grain taken from all parts of the car and at all depths.

The tester is of two parts: first, a small cylindrical copper vessel having a bucket-like handle and holding 2 quarts; second, a pair of steelyard-like balances for weighing the sampler full of wheat, the beam of which is so graduated as to read off directly the pounds per bushel. With this tester is the fault principally to be found, since a very slight difference in the method of filling will give profound differences in results.

The results from the following simple experiment carried out with a standard Fairbank's tester strikingly illustrate this fact:

	Lbs. per bu.
1. Pouring in at mouth of tester.....	60
2. Same jolted, re-filled and tested.....	63½
3. Pouring in 8 inches from mouth of tester.....	62½
4. Same jolted, re-filled and tested.....	64

Here is therefore an extreme difference of 4 pounds per bushel, which would amount to \$40 on a car of wheat. It must not be understood, however, that such a difference is at all common or even probable, since among grain inspectors there is a standard way of filling the tester, and they make several tests, the average of which is taken as the official grade. This is done in the following manner: The tester is pushed about half way down into the grain by the side of the little pile of wheat mentioned above in the description of the sampler, and filled by three strokes of the double hands pulling the wheat into the tester. It is then "struck" or leveled by a somewhat zig-zag movement of the beam of the balance across the top of the tester. Only one stroke is made. It is then weighed and the weight recorded. Most inspectors make three tests. To do this they simply pour out the wheat and make the test over again. These tests, if made by a careful inspector, should not vary more than $\frac{1}{4}$ pound per bushel. To do this, however, the test must be made in exactly the same way each time. A slightly different manner of filling the tester will cause the results to vary. Such things as the rapidity of filling, whether it is pulled in slowly or jerked in with a quick motion of the hands, or whether the wheat strikes the middle of the tester and runs down to the sides from a pyramidal center or falls first on the side, rolling down an inclined plane to the other side, will cause considerable difference in the results.

Such differences in the manner of filling the tester gave results varying from $57\frac{3}{4}$ to $58\frac{1}{2}$ pounds per bushel, or \$7.50 per car. For these reasons different inspectors will be apt to get slightly different results, but the average results obtained by each inspector should not vary over one-fourth pound per bushel, or the extremes for different inspectors should not be more than one-half pound per bushel; yet these differences would amount to \$2.50 to \$5 per car. If, therefore, such differences could occur unconsciously, is it not perfectly plain that an inspector employed by the grain dealer would always be sure that the doubt was not against his employer? Furthermore, when fraud is so profitable, so easy, and so hard to detect, is it at all unreasonable to suspect that it occasionally or even frequently is practised? For we cannot suppose that the grain business is so unlike other business as to have no unscrupulous men in it. The inspectors admit that different men and sometimes the same man will give grades varying one-half pound per bushel. This seems insignificant, but we must remember that it means five dollars per car, and that this, in the aggregate, amounts to considerable. To the average farmer, who sells but one, two or three cars per year, the \$5, \$10, or \$15, while amounting to something, is not of vital significance; but even to the small miller who uses but one or two cars per day, the difference is enough to pay the wages of one of his most expensive employees; and to the farmers of the whole state, who raise more than sixty-five thousand car-loads of wheat per year, the difference would amount to nearly one-half million dollars.

It is not the purpose of the writer to find fault with the inspectors, for he does not know of a single case where fraud has been practised or even suspected, but the present agitation in the north-western states and the recent legislation by the U. S. Senate, together with the above results of his recent investigation of the matter, leads to the suggestion that though possibly the farmers may not have to demand state inspection at the present time, it would be well that they inform themselves as to the errors possible under the present system and demand a change to systems and to standards which are more exact and which involve less variable methods of testing. The Department of Botany is engaged in some experimentation which promises to be of value in the solution of this problem, but owing to the unfinished state of the work at the present time the publication of the results so far obtained will be deferred until the pending investigations are completed.

GEO. F. FREEMEN.

THE INDUSTRIALIST.

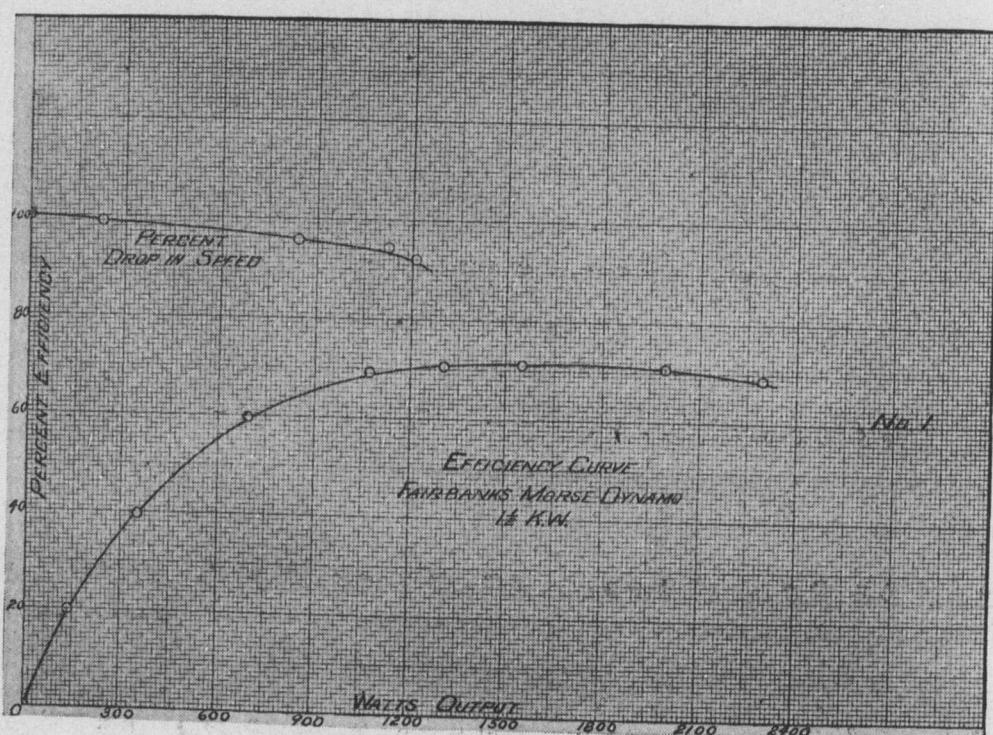
Expenses (not Including Salaries) College Departments for Eight Years.

DEPARTMENTS.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.
Executive.....	\$8,030	\$4,442	\$4,558	\$4,234	\$2,068	\$5,518	\$5,398	\$5,585
Agriculture.....	3,769	4,151	6,346	7,585	4,397	5,851	8,215	7,391
Animal Husbandry.....					5,831	9,078	15,809	6,800
Dairy Husbandry.....					2,045			5,543
Botany.....					776	889	914	1,151
Chemistry.....						640		3,001
Horticulture.....							3,021	3,062
Entomology.....							2,876	1,044
Zoölogy.....							640	
Veterinary.....								1,802
Mechanical Engineering.....								5,780
Heat and Power.....								4,819
Physics and Electrical Engineering.....								8,168
Architecture and Drawing.....								3,984
Music.....								3,227
English.....								311
Mathematics.....								2,286
Domestic Science.....								771
Domestic Art.....								21
Printing.....								161
History and Civics.....								1,679
Economics.....	93	160	7	1	3	182	64	302
Public Speaking.....	15	24	2	225	386	663	600	1,600
Library.....	135	853	231	198	151			
Military.....	516	418	321	198	320			
Physical Training.....	250	250	160	263	138	242	129	138
Preparatory.....	193	47	305	293	426	313	351	579
Philosophy.....				1	10	76	70	90
German.....								11
Total.....	\$25,364	\$15,344	\$21,640	\$25,233	\$86,140	\$88,384	\$57,774	\$57,722

Test of a Small Gasoline Electric Light Plant.

The adaptability of the small gasoline engine to drive an electric generator for lighting purposes has raised a number of inquiries among farmers and others as to the practicability of lighting their residences, barns and other buildings with the electric incandescent light, produced by an electric generator driven by a gasoline engine, the engine being used for other purposes also.

With the above inquiry in view a test was made of a small unit, consisting of a two horse-power, vertical, Fairbanks-Morse Co.'s



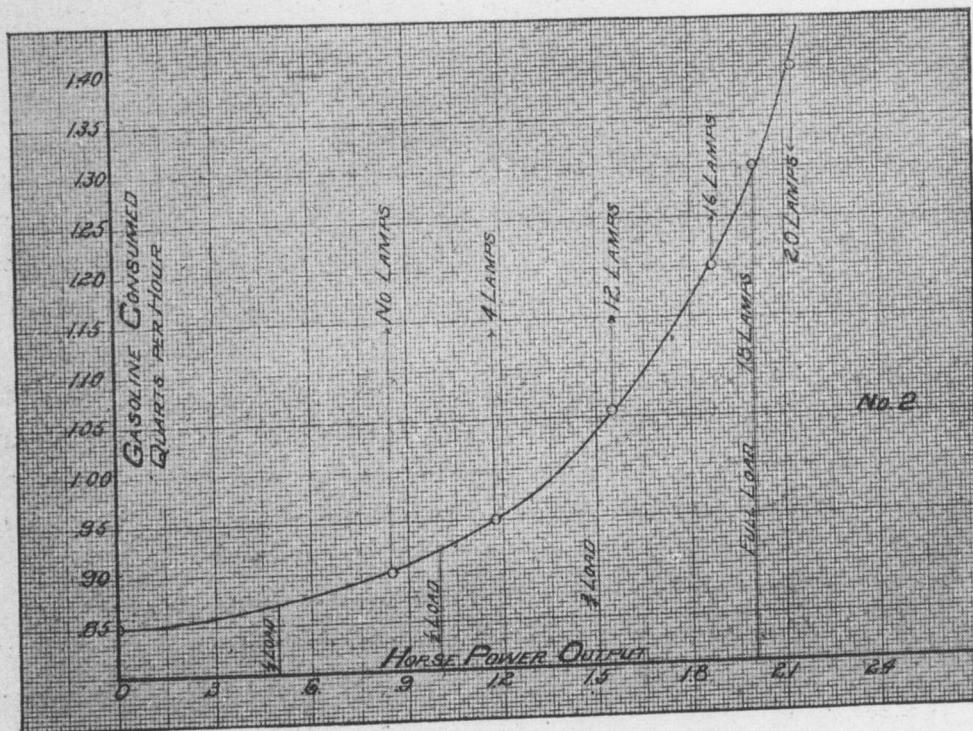
throttling governor gasoline engine, belted to their one and one-half kilowatt electric generator. This unit was installed in the electrical engineering laboratory of the Kansas State Agricultural College, and the data obtained by Messrs. Dow, Carlson, and Stoddard, senior students in the electrical engineering course. The outfit was set up and the test started about March 23, and was continued up to June 5. The tests were made for five and ten hour continuous runs.

The generator was first calibrated or tested for efficiency. Curve No. 1 shows the results, in which it may be seen that at full load the generator has an efficiency of 71 per cent.

The gasoline tank from which gasoline was supplied to the engine was carefully calibrated or gauged, so that at any time the amount of gasoline consumed for a given period could be easily

read. Readings were taken immediately after starting and stopping.

The average amount of gasoline consumed for a number of five- and ten-hour runs was 1.35 quarts per hour on a full load of eighteen 16 candle power, 110 volt, incandescent lamps, which represents a two horse-power output for the engine. The amount of gasoline consumed per hour when running light, *i. e.*, with no load on the engine, was .85 quart. The above figures are based on a grade of gasoline known as "Crown gasoline." Assuming this to



cost 15 cents per gallon, the cost per kilowatt hour is approximately 5 cents. (746 watts equals one horse-power, 1000 watts equals one kilowatt).

A higher grade of gasoline was tested, but with no better results as to cost.

Curve No. 2 shows clearly the consumption of gasoline per 16 candle power lamp hour and per horse-power hour for any load up to full load.

The average results are shown by the following tabulated data:

TIME.	Generator.			Gasoline qts. per hr.	Engine H. P.	Cost H. P., hour.	Cost K. W., hour.
	Volts.	Amp.	Watts.				
10 hours	110	9.2	1023	1.35	2	\$0.0253	\$0.0495

The generator was operated at its rated speed, 1850 revolutions per minute, and a test made for voltage regulation. This was done by means of a voltmeter placed across the generator terminals and its fluctuations observed.

With any given load the voltage did not vary to exceed one volt. This is less than one per cent when operating the lamps at their normal voltage, 110 volts. This variation is more rapid than in the case of a steam-driven unit with equal variation, and hence is likely to be more noticeable. A comparative test, however, was made to determine the difference between the incandescent lamps operated by the College steam-driven generator and those operated by the gasoline engine, with the result that little difference could be detected—the casual observer would not distinguish between them.

No attention was required by either the engine or generator after starting on a ten-hour run except to supply water to the cooling tank. The highest temperature of the water in the cooling tank was 185° F.

B. F. EYER.

The Board of Regents held their summer meeting last week at the Hays Experiment Station. Much routine business was transacted and the work of the coming fall term was thoroughly discussed. The list of employees and teachers was completed as far as could be done. Roy A. Seaton, B. S. (K. S. A. C.), assistant in mathematics, was made assistant professor of mathematics. B. R. Ward, A. M. (Harvard), was elected assistant professor of English. Asst. Prof. O. H. Halstead, M. S. (K. S. A. C.), of the Mathematical Department, was transferred to the Department of Physics. The assistants, Ella Weeks, A. B., G. F. Freeman, B. S., Geo. C. Wheeler, M. S., L. W. Goss, D. V. M., Daisy Zeininger, B. A., were advanced in rank to instructors in their respective branches. The following new assistants were elected: Mathematics Department: Wm. H. Andrews, B. S. (K. U.); Miss McCotter, B. S. (Ann Arbor); J. D. Magee A. M. (Chicago). English Department: Miss Edetha M. Washburn, A. B. (K. U.). German Department: E. L. Meinzer, A. B. (Beloit). Music Department: Miss Florence S. Latimer, B. M. (Ferry Hall Seminary). Domestic Science Department: Miss Marjorie Russell, (Mechanics Institute). Botany Department: Herbert F. Bergman, B. S. (K. S. A. C.). The Board also elected new assistants for the Departments of Veterinary Science, Dairy Husbandry, Chemistry, Agronomy, Preparatory Instruction, and Heat and Power, but the elected parties have not as yet accepted the proffered positions. Additional assistants will be selected later, as they may be needed.

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Local Notes.

The campus never looked greener and shadier than now.

The Department of Architecture is enjoying a new typewriter.

The *Manhattan Mercury* has lately installed a Mergenthaler linotype.

The carpenter-shop is busy making six large wall cases for the Department of Chemistry.

The total amount subscribed to date for a town clock in the court-house is about \$600.

The new smoke-stack of the power-house is completed to a height of fifty feet above ground.

Professors McKeever, Hamilton and Brink have started their residences down in Faculty Row.

Fresco painter A. Ohst, of Alma, has commenced his annual summer job at the College. He is at present at work on the walls of the library and reading-rooms.

The College was recently honored by a visit from Prof. L. H. Bailey, dean of the agriculture department and director of the experiment station at Cornell University.

Manhattan is making strong efforts to get the next State Poultry Show located here. The annual Kansas Poultry Show is said to be the second largest show of the kind in the world.

Arrangements have been made by the Board of Regents for building a temporary barn for the large barn destroyed by lightning this summer at the Hays Experiment Station farm.

Professor Kammeyer is making a tour through the South. He intends to be gone about three weeks, and will visit Missouri, Illinois, Kentucky, Tennessee, Georgia, Alabama, and Florida.

Asst. Theo. Scheffer has spoken before five county institutes this summer and is to address seven others. His subject is: "Nature Study and Primary Agriculture in the Public Schools."

J. H. Miller, superintendent of the farmers' institute work, has rented the handsome new dwelling being built on Fremont by H. Pfeutze. Mr. Miller will move his family here from Holton about August 1.

Contractor John Winter has commenced work plastering the west basement of Physical Science Hall, and contractor H. Shubert has started plastering some of the basement rooms of the Auditorium.

Assistant Brandt, of the Architectural Department, has returned from New York, intending to go to Sunshine, Colo., in a few days.

There were eighty-seven candidates examined in the recent Riley county teachers' examination. Twenty-nine of these received second-grade certificates, thirty-nine received first grade, and twenty-three failed.

The friends of Captain Shaffer are glad to hear that the War Department has extended his service at this College another year. The captain has been here three years, which is the limit usually granted by the Government.

Mr. Spencer V. Cortelyou, engineer of the fourth district, Luzon, P. I., was here the latter part of last week visiting his brother, Professor Cortelyou. Mr. Cortelyou was returning to Los Angeles via Europe, thus making a tour of the world.

Foreman Wabnitz, of the mechanical work shop, has moved into the Mrs. F. Butterfield residence, at 829 Leavenworth street, and Assistant Yost, of the Heat and Power Department, has purchased and moved into the residence vacated by Mr. Wabnitz.

The new Horticultural Hall is progressing slowly, and it is doubtful if it will be completed by the beginning of the fall term. Contractor Stingley says that he can not get stone-cutters and masons, and that the roads are often in such condition that he can not haul materials.

Professor Erf is preparing drawings for a fine exhibit at the Hutchinson State fair. His department will occupy the south wing of the Agricultural Hall and will show a complete working creamery. A number of milk cows will be fed in an adjoining shed and milked with the College milking machine.

The board of control of the State charitable institutions has formulated a set of civil service rules for guidance of itself and the superintendents. Among these rules there is one relating to the farm foreman, which reads: "Should be a graduate of an agricultural college and have had five years of experience in practical farming."

On account of an expected rise of the price of printing paper, Superintendent Rickman has sent a rush order to the Graham Paper Co., of St. Louis, for a car-load of machine finish book paper. The order covers 600 reams and will cost over \$1000. Another order for a higher grade of book paper, linens, flats and envelopes will be sent in soon, to the value of about \$800.

The catalogues for 1905-'06 have finally arrived from the State printing-office and are being mailed as fast as the force in the Secretary's office can wrap and address them. We hope that every copy applied for will reach its address by the middle of the week. The printing was delayed by the State printer on account of the removal of the plant to the new quarters provided by the last legislature.

Captain Shaffer went to Ft. Riley last week to accompany the 9th Cavalry on their 250-mile practice march. The troops left Ft. Riley Sunday morning and are to proceed as far west as Ellsworth and return to the post. There are about 700 men in the battalion, which is commanded by Col. E. S. Goodfrey, 9th Cavalry, commandant at Ft. Riley. It was expected the trip would take about twelve days.—*Nationalist*.

The Japanese Consul, Seizaburo Shimizu, of Chicago, spent two days here last week, visiting the Experiment Station, the College, and the Manhattan Mill, and went West to visit other mills. Mr. Shimizu is making an extensive tour for the purpose of gathering information regarding wheat and flour that may be of benefit to Japan. He learned several things here that he prized very highly, and spoke very enthusiastically of the courteous treatment received from all whom he met, and especially of Profs. J. T. Willard and V. M. Shoesmith, who showed him about the College and College farm. He counts the visit here the most productive of important information he has yet made.—*Nationalist*.

Alumni and Former Students.

Lena Finley, '05, is spending a delightful summer with her sister at the beach, La Jolla, Cal.

Mary Hall, '04, is teaching cooking and dietetics in the Good Samaritan Hospital, Los Angeles, Cal.

W. H. Sanders, '90, and Hattie (Gale) Sanders, '89, have changed their address from Mangonia to Miami, Florida.

Phoebe Smith, '97, and Ora Yenawine, '95, have taken the teachers' course in domestic science here this summer.

Alice Loomis, '05, is studying several branches bearing upon domestic science in the University of Chicago this summer.

Helen Bottomly, '05, is taking a course in stenography and typewriting in the Kansas Wesleyan Business College, Salina.

Mamie Cunningham, '05, after teaching last winter and attending the Normal School at Alva, Okla., is spending a few weeks' vacation in Colorado. Next winter she will teach at Fairview, Okla.

Jessie Sweet, '05, has been engaged as teacher of domestic science in the South Side Public School of Evanston, Ill. The position is an excellent one, and Miss Sweet has the organizing of this work, it having been just introduced.

Chas. S. Dearborn, '04, and Florence R. Ritchie, '04, were married Wednesday, July 11, at the residence of the bride's parents, Kansas City, Mo. Mr. Dearborn is assistant professor of mechanical engineering, Montana Agricultural College.

Capt. E. A. Helmick and Lizzie (Clarke) Helmick, third-year students in '83, will be located at Fort Liscum, Alaska, until further orders.

Mattie Pittman, '06, has been teaching classes in domestic science under the auspices of the U. and I. Club, Topeka, Kan., since Commencement. Her work there closed for the summer July 26.

Margaret Minis, '01, librarian here, is spending the summer traveling in Europe with her uncle, Rev. Dr. E. L. Thorpe, student in 1874. Doctor Thorpe's previous travels make him a most entertaining guide, and Miss Minis is having "the time of her life."

Dr. H. D. Orr, '99, after completing two years of service in St. Luke's Hospital, has been appointed to a position in Alexian Brothers' Hospital, Belden and Racine Avenues, Chicago. This is one of the largest hospitals in the city, its capacity being about 300 beds.

Clara Spilman, '00, instructor in domestic science at the Christian Female Orphans' School, Camden, Mo., after a short visit at home, has been attending the summer school at Bradley Polytechnic Institute, Peoria, Ill., where she is studying domestic science and domestic art.

Margaret Haggart, '05, is attending the Diet School of the Johns Hopkins Hospital, Baltimore, Md., this summer. With the beginning of the next college year she will assume the duties of professor of domestic science in the New Mexico Agricultural College, at Mesilla Park, N. M.

Abby Marlatt, '88, teacher of household economics in the Technical High School, Providence, R. I., delivered four lectures on "Applied Art; Domestic Science in Secondary Schools," in the school for graduate workers in household science, conducted July 2 to 14 under the auspices of the University of Illinois.

J. M. Westgate, '97, assistant agrostologist in the Department of Agriculture, has an article in the July number of *Farming* on "Alfalfa—the Crop upon which Western Farming is Based." The article is well written, and beautifully printed and illustrated. Mr. Westgate spent a few days visiting the College and relatives here the early part of July.

E. O. Sisson, '86, who was assistant professor of education of the University of Illinois last year, has accepted the position of professor of pedagogy and director of the department of education at the University of Washington. He has been teaching in the summer school at Urbana this summer, but expects to leave for Seattle about the last of July.

B. H. Pugh, '92, of Topeka, Kan., is noticed in the daily papers as an inventor and manufacturer of several farm and garden implements. His first invention was a potato cutter, which he put on the market about two years ago. He has also invented a transplanter for small plants and young trees, which prepares the soil and sets the trees properly at the desired intervals.

Ula Dow, '05, spent last year in studying domestic science at Framingham, Mass., taking such work as seemed most useful to her. She received the diploma of the institution last June. Beginning July first she has been conducting a large portion of the work in the domestic science course for teachers, here.

Married, June 28, at the home of the bride's parents in Manhattan, Miss Eva Burtner, '05, and Andrey Potter, assistant professor of mechanical engineering of this College. The bride has grown to womanhood in this city and is held in high esteem by all who know her. She was one of Riley county's popular school teachers. The groom is a graduate of the Massachusetts Institute of Technology and is a growing young scientist. After the ceremony Professor and Mrs. Potter left for Colorado for a few weeks' visit. They are now at home at 512 Bluemont Avenue.

W. E. Mathewson, '01, assistant professor of chemistry here, has resigned his position, and will spend a year or two in study abroad, probably in Germany. Since coming to this decision he has been offered a position in the Bureau of Standards, Washington, D. C., but declined it. Professor Mathewson as a student and officer has been identified with the Chemical Department since 1898 and his presence there will be sadly missed by its head. He is one of the most thorough students and hardest workers the institution has ever had. While a larger salary would have retained him for a time, the advanced study that he will take now will doubtless redound more to his ultimate advancement, which it is safe to predict will be sure.

Loua Adelle Blachly, '01, was married Wednesday evening, July 18, to Mr. Geo. F. Freeman. As the clock was striking eight, Mrs. Maude (Parker) Hutto began the prelude to "Thine for Life," which was beautifully sung by Miss Gertrude Eakin. The unequalled wedding march from Lohengrin ushered in the bridal party—the bride and groom, attended by Miss Kate Robertson and Professor Mathewson. A simple ring ceremony was performed by the Rev. O. B. Thurston, accompanied by soft music. After receiving the old but ever new congratulations of friends and relatives, refreshments were served by a quartet of charming young ladies. During the progress of this delightful feature of the occasion it developed that Mr. and Mrs. Freeman had disappeared. The surmises of the guests that they had gone to a train were confirmed by a later announcement that they went to Colorado to spend two weeks seeing the sights. Mrs. Freeman has spent her life thus far in Manhattan, and is well known for her attractive nature, and especially for her beautiful singing. Mr. Freeman, a native of Alabama, is instructor in botany at the College, and during his two years here has impressed all as a young man of thorough scientific attainments, geniality of disposition, and strength of character. No brighter prospect for happiness ever opened before a young couple, and hundreds of friends hope that it may never be clouded. They will reside at 914 Leavenworth street.

The ripe experience and unlimited energy of H. M. Cottrell, '84, will be in the service of the Colorado Agricultural College next year. He has been elected professor of animal husbandry. In the meantime he is giving expert advice in reference to alfalfa growing to the proprietors of a large Florida plantation. From Florida he will go to Jiminez, Mexico, to assist the owners of 362,000 acres in starting the Campbell system of dry farming. Professor Cottrell's experience, intelligence, and hearty enthusiasm will insure success in his new position.

All were deeply moved, and his many friends with much sorrow, by the announcement of the death of Jay G. Worswick, '05, July 22, in an engagement with Pulajanes, near Buraen, island of Leyte, Philippines. From the meager reports in the papers it seems that Mr. Worswick completed the work in a school for the constabulary last June and was appointed to a lieutenancy. He was killed in his first battle. The horrors of war are never really felt until they touch our own friends or relatives. Mr. Worswick was well known and highly respected in College circles. He was a good student, and at the same time earned his way through College by hard work. The sympathy of all will be with his family and nearest friends.

For the following items of news we are indebted to the *Nationalist*:

J. L. Dow, A. C. Ferris, and Richard Reece, all of '06, have positions with the Western Electric Co., Chicago, Ill.

Miss Stella Stewart, ['00], will not return to Jacksonville, Ill., but has accepted a position in the deaf mute school at Philadelphia, Pa., where she formerly taught school.

Miss Edith McDowell, ['93], has arranged to clerk in the McDowell store with her brother, Percy, at Billings, Mont. It is probable that Collins McDowell will also move to Billings.

Miss Bertha H. Bacheller, '88, for nine years past a teacher in the Kansas City high school, was married recently to Rev. Guy Foster, pastor of the Pilgrim Congregational church there.

E. W. Thurston and F. E. Brown, both of '06, went to Kansas City last week, where they have positions with the Western Electric Co. They report that they are pleased with their work.

Chauncey Weaver, of Wakefield, '06, spent Sunday here. He expects to leave about August 5 for Schenectady, N. Y., where he has a position with the General Electric Co. C. E. Davis, also of '06, expects to accompany him.

Miss Henrietta M Hofer, ['02], will graduate from the Chicago Conservatory of Music June 19. She has accepted a position as professor in the vocal department at Graceland College, Lamoni, Iowa, and will take up her work in September.

Ed. Secrest, Jr., ['02], received notice of his appointment to the position of State Forest Inspector of Ohio, at Manhattan last week. He leaves for Hutchinson and other southern Kansas points to study private plantations before going east.—*Randolph Enterprise*.